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FLORA OF PERU

BY

ROGERS MCVAUGH

CURATOR OF VASCULAR PLANTS, UNIVERSITY OF MICHIGAN

BOTANICAL SERIES
FIELD MUSEUM OF NATURAL HISTORY
VOLUME XIII, PART IV, NUMBER 2
NOVEMBER 28, 1958

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FLORA OF PERU

ROGERS MCVAUGH

MYRTACEAE. Myrtle Family

Shrubs or trees or rarely subherbaceous. Leaves simple, opposite (except in some introduced genera), exstipulate, entire or rarely crenate, punctate with resinous or pellucid glands, usually pinnately veined. Midvein usually elevated and prominent on the lower surface. Principal lateral veins usually uniting distally into a "marginal vein" which extends nearly the length of the blade and more or less parallel to the margin but somewhat separated from it. Flowers borne on axillary (or rarely terminal) branches, solitary or in specialized bracteate inflorescences with opposite branching, these modified in various ways, e.g., by elongation of the axis and reduction of the lateral axes to one flower each ("racemes"); by suppression of the axis and reduction of the lateral axes to one flower each (flowers in "glomerules" or "umbelliform clusters"); by reduction of the lateral axes to one pair, these arising just below the flower which terminates the central axis ("dichasium"); by potentially indefinite elongation of both central and lateral axes, this resulting in a "panicle" with proximal branches elongate and a transition from these to short simple branches and terminal triads of flowers. Flowers regular or essentially so, hermaphrodite or rarely by abortion unisexual. Ovary inferior, the hypanthium adnate to the ovary its whole length or prolonged beyond it so that the stamens, petals and calyx-lobes appear to arise from the distal margin of a short tube surrounding the summit of the ovary. Calyx-lobes usually 4 or 5, distinct and imbricate, or the calyx calyptrate and circumscissile, or rupturing irregularly in anthesis. Petals usually 4 or 5 (sometimes reduced in number or size, or wanting). Stamens usually indefinitely many, in one–many series about the margin of the usually thickened calycine disk, usually inflexed in the bud. Filaments usually filiform and distinct in Peruvian species. Anthers usually short, versatile or basifixed, bilocular, opening (at least in Peruvian genera) by longitudinal slits. Style simple, elongate, with small capitate or peltate stigma. Ovary 2- to many-locular, the placentae affixed to the axis or parietal and coalesced into a central axis, the ovules 2 or more. Fruit fleshy or capsular. Embryo various.

The genera now referred to Myrtaceae were divided by DeCandolle among three tribes, namely, Chamaelaucieae (with dry unilocular and usually indehiscent fruit), Leptospermeae (with dry multilocular and usually dehiscent fruit), and Myrteae (with fleshy multilocular fruit). This system was set forth in detail in the Prodromus 3: 207–288. 1828. Essentially the same arrangement was followed by Bentham, in Benth. & Hook. f. Gen. Pl. 1: 690–720. 1865. Niedenzu, in Engler & Prantl, Natürl. Pflanzenfam. III (7): 57–105. 1893, erected two subfamilies; the first, Myrtoideae, comprised the one tribe Myrteae, and the second, Leptospermoideae, included the two tribes Leptospermeae and Chamaelaucieae.

The subfamily Leptospermoideae is especially developed in the Australian region and to a lesser extent elsewhere in the southwest Pacific. The total number of species approaches 1000, including according to some authors nearly 500 species of the vast Australian genus *Eucalyptus*. The only American member of the subfamily is the endemic Chilean species *Tepualia stipularis* (Barn.) Griseb. All the native Peruvian Myrtaceae are members of the tribe Myrteae, but several species of *Eucalyptus* have been introduced for shade and for ornament, and at least one has become widespread.

Key to the Tribes (Peruvian representatives only)

Fruit dry, capsular, consisting of the capsule immersed in the hardened hypanthium, the valves sometimes projecting beyond the rim of the hypanthium; petals and calyx-lobes united into an operculum which is dehiscent at anthesis; flowers usually in pedunculate axillary umbels; adult leaves glabrous, lanceolate and long-petiolate, and mostly alternate, the juvenile ones often broad, subsessile and more or less opposite.
Tribe I. Leptospermeae

Fruit fleshy (a few- or many-seeded "berry"); petals and calyx-lobes free, or in a few genera united into an operculum; flowers variously arranged, never in pedunculate axillary umbels; leaves opposite, rarely markedly long-petiolate. . . . Tribe II. Myrteae

Tribe I. LEPTOSPERMEAE DC.

1. EUCALYPTUS L'Her.

Glabrous trees or shrubs, the leaves alternate, leathery, usually elongate, lanceolate and 8–12 cm. long or more, markedly petiolate and often hanging vertically; juvenile foliage (of seedlings or shoots

from felled trees) often broad, subsessile and more or less opposite, rarely hairy; flowers usually in pedunculate axillary umbels, sometimes forming panicles; bracts and bracteoles deciduous so early as to be seldom seen; ovary usually 3- to 4-locular, immersed in and surrounded by the fleshy hypanthium which hardens in fruit and is prolonged beyond the summit of the ovary into a rim which bears the numerous stamens; petals and calyx-lobes united into an operculum which is continuous with the rim of the hypanthium in bud and circumscissile at anthesis; stamens widely spreading in anthesis and forming the showy part of the flower; style about as long as the operculum; ovules and seeds numerous, but only a few in each locule fertile.

A large and almost exclusively Australian genus at one time supposed to include nearly 500 species; some recent authors have suggested that the actual number is somewhat smaller. A recent account of the Northern Australian species, by S. T. Blake in Austral. Jour. Bot. 1: 185–352, *pl. 1–36*. 1953, includes 50 species in this part of the continent; J. M. Black, in Fl. South Austral. ed. 2, 612–632. 1952, lists 52 species.

Numerous species have been introduced into the tropical and warm-temperate regions of America for ornament, for purposes of reforestation, for wood and for lumber; only the following seems to have been entirely successful.

Eucalyptus globulus Labill. Voy. 1: 153, *t. 13*. 1799.

A large tree, said to reach a height of 75–90 meters, with pale deciduous bark and yellowish green angled branchlets; adult leaves alternate, lanceolate and often falcate to narrowly ovate, 2–3 (–6) cm. wide at base, 12–25 cm. long, (3–) 5–8 times as long as wide, attenuate from base to the slenderly pointed apex, the base often obliquely unequal-sided, abruptly rounded to the flexuous petiole 2–4 cm. long; midvein pale, flat or concave above, convex beneath; leaf-margins bordered by heavy cartilaginous veins about equal to the midvein but compressed at right angles to the plane of the leaf and often standing somewhat above and below it; lateral veins delicate and inconspicuous, joining an equally slender and nearly straight submarginal vein just within the cartilaginous border; foliage with numerous small dark glands on both surfaces; juvenile shoots and leaves conspicuously whitened and waxy-glaucous, their leaves opposite, sessile, ovate to oblong, cordate, abruptly short-acuminate at tip, 4–5 cm. wide, 7–15 cm. long; flowers large, subsessile, solitary or

rarely 3 in an axil, on a massive, broadly 2-angled peduncle up to 5 mm. long; buds 1.7–2.5 cm. long, conspicuously whitened by a heavy waxy-farinose coating; hypanthium about 1 cm. long, truncate at base, strongly 4-angled, obpyramidal, irregularly and coarsely warty-roughened especially on the angles and the thickened margin; calyptra dome-like, roughened like the hypanthium, usually with a broad knoblike or acute central beak; stamens 1.5 cm. long (the flower when expanded 3–4 cm. across), borne on the inner edge of the disk which projects about 3 mm. beyond the thickened margin of the hypanthium; style 8–10 mm. long; fruit 2–2.5 cm. broad and high, flat-topped or the surface convex, the 4–5 valves not exserted but nearly plane with the surface; seeds 1–3 mm. long, very numerous, prismatic, irregularly several-angled.

A native originally of Victoria, New South Wales, and Tasmania, this species is now extensively planted and naturalized from California to Argentina and Chile, especially in high semi-arid regions; it is a valuable timber tree of rapid growth, and now forms a characteristic feature of the landscape in many parts of Latin America. According to Acosta Solís, "El eucalipto en el Ecuador," in Flora (Quito) 15–16: 149–194. 1945, *E. globulus* was introduced into Ecuador in 1865 and has become a valuable resource in the inter-Andine region of that country. It has likewise become abundant in Peru, as in Cuzco, where, according to Herrera in Contr. Fl. Depto. Cuzco, ed. 2, 148–149. 1921, it was introduced about 1880 and subsequently became general in all the provinces of that Department.

Amazonas: Chachapoyas, 2,700 meters, *Williams 7562.*—Junín: Tarma, 3,000–3,200 meters, *Killip & Smith 21870.* "Eucalipto."

Another species, *Eucalyptus camaldulensis* Dehnh., Cat. Pl. Hort. Camald. ed. 2: 20. 1832 (*E. rostrata* Schlecht., 1847, non Cav., 1797), has been collected near Yucay, Cuzco, by Soukup (no. 840). The inflorescence is a 6- to 10-flowered axillary umbel, on a peduncle 1–2 (–3) cm. long, the pedicels 3–8 mm. long; buds ovoid, 5–10 mm. long, the calyptra longer than the base (up to 3 times as long), abruptly narrowed to a stout straight beak 1–6 mm. long; fruit nearly hemispheric, 4–6 mm. high, 5–8 mm. broad, the 3–4 deltoid or narrowly pointed valves projecting 1.5–3 mm. beyond the equator.

Tribe II. MYRTEAE DC.

Classification of the subtribes of the Myrteae has been based principally upon characters of the mature embryo. Such a classifi-

cation appears to be in the main a natural one, but practically it presents many difficulties. Members of this family are usually collected when in flower, at a time when it is impossible to ascertain the structure of the embryo. Flowers and fruits are rarely found on the same plant at the same time, so that any usable system of classification must utilize characters of flower and inflorescence in addition to those which may be found in the mature fruit. The subtribes accepted in the present treatment are those proposed by Berg, and the arrangement of genera follows in the main that of his "Revisio Myrtacearum Americae," in Linnaea 27: 1–472. 1855–56. The subtribes are characterized as follows:

1. Subtribe *Myrciinae* Berg. Cotyledons foliaceous, contortuplicate. Radicle elongate.

2. Subtribe *Eugeniinae* Berg. Cotyledons fleshy, distinct, or somewhat or completely fused, or conferruminate; radicle very short.

3. Subtribe *Pimentinae* Berg. Embryo spiral, subspiral or uncinate-curved. Radicle elongate; cotyledons very short.

Key to Flowering Material

Inflorescence compound, usually many-flowered (flowers often 30–200 or more), with branches compound and opposite near the base of the panicle, becoming irregularly ternate or solitary near tips; calyx-lobes, if developed, usually 5; bracts and bracteoles usually deciduous at anthesis or before.

Calyx-lobes evident in bud and in anthesis, usually with thin distal and lateral margins which are imbricate or at least contiguous at base; central axis of the inflorescence well developed and about as long as the primary lateral branches. . . . *Myrcia*

Calyx closed in bud or merely the tips of the lobes free, either circumscissile or splitting irregularly between the lobes; central axis of the inflorescence often aborted at the node where the lowest lateral branches emerge, and the panicle as a whole seeming to consist of two nearly equal parts.

Calyx closed in bud, calyptrate, circumscissile; petals minute or often wanting; malpighiaceous hairs often present and conspicuous; bracts mostly deciduous. . . . . *Calyptranthes*

Calyx closed in bud or the tips of the lobes free, the buds opening by irregular longitudinal splitting between the calyx-lobes nearly or quite to the summit of the ovary; petals

small, usually present; malpighiaceous hairs usually not apparent; bracts sometimes persistent.....*Marlierea*

Inflorescence not as above, 1- to several-flowered (flowers rarely as many as 30), racemose, regularly dichotomous or the flowers solitary, sub-umbellate or glomerate; calyx various, the lobes usually 4 and distinct if the flowers are more than 7; bracteoles often persistent.

Cymes lateral on old wood, thrice dichotomous, 2–3 cm. long, with persistent paired bracts and a central sessile flower in each fork; calyx-lobes 4; flowers red; stamens 4–8, 1.5–2 cm. long. *Myrrhinium*

Inflorescence racemose or dichasially branched, or the flowers glomerate or solitary; cymes, if occasionally twice or thrice dichotomous, irregularly branched and in leaf-axils near the tips of twigs; flowers mostly white or cream-color, rarely pink or red; stamens usually shorter and far more numerous.

Calyx closed or essentially so in the bud, opening at anthesis by irregular longitudinal slits.

Flowers about 4, nearly sessile, glomerate (in a much abbreviated raceme), the clusters appearing involucrate because of the relatively large persistent bracts; calyx-lobes 4; ovary bilocular, the locules 2-ovulate.....*Plinia*

Flowers 1, or 3–7 in a dichasium, pedicellate or the dichasia pedunculate, not involucrate; calyx-segments usually 5; ovary 2- to 7-locular, the locules many-ovulate..*Psidium*

Calyx-lobes normally developed even in the bud, the calyx at anthesis not or scarcely splitting beyond the bases of the lobes.

Calyx-lobes 5.

Small or prostrate shrubs or subshrubs with coriaceous vaccinioid leaves 1–2 cm. long or less; flowers solitary; bracteoles foliaceous and persistent; Andean páramos.

Anthers sagittate, the connective dilated.....*Ugni*

Anthers oblong or subrotund, not sagittate, the filaments filiform.....*Myrteola*

Shrubs or trees with larger leaves; flowers solitary or in small dichasia; bracteoles deciduous; middle and low elevations.

Leaves coriaceous, subsessile, suborbicular, 1.5–7.5 cm. long and wide; dichasium stout, 3- to 7-flowered; Lima, on Pacific slopes. . . . *Myrcianthes quinqueloba*

Leaves membranaceous or chartaceous, petiolate or elongate or both, 1.5–3.5 times as long as wide; flowers solitary or in slender 3 (–7)-flowered dichasia; cultivated and escaped, otherwise mostly Amazonian lowland.

Flowers usually 4, in two decussate pairs at the lowest nodes of an axillary branch; calyx-lobes broadly rounded, 3–6 mm. long, spreading after anthesis; mature petioles 10–15 mm. long; 3–4 lowest pairs of veins in the leaf closely grouped, the succeeding ones increasingly distant. . . . . *Campomanesia*

Flowers 1–7 in an axil; calyx-lobes, if developed, 3 mm. long or less (in one species with narrow terminal appendages 6–14 mm. long); mature petioles 10 mm. long or usually less; veins of leaf uniformly spaced, the lower ones not markedly aggregated. *Psidium*

Calyx-lobes 4.

Stamens 25–50, the filaments 15–22 mm. long, red; style 15–22 mm. long, about three times as long as the petals; plants heavily villose or tomentose. . . . . *Acca*

Stamens much more numerous, or much shorter, or white; style rarely more than 15 mm. long (usually much less), usually less than twice as long as the petals; plants various.

Inflorescence a raceme, the flowers in opposite decussate bracteate pairs; central axis of raceme abortive at tip (the terminal flower wanting) and the axis often so much abbreviated that the flowers appear glomerate or umbellate.

Calyx-tube much prolonged above the ovary, circumscissile at base after anthesis; flowers usually 4, small (buds in our species 5 mm. long or less) and nearly sessile, with conspicuous paired persistent involucre-like bracteoles; ovules 2 or 4 in each locule. . . . . *Myrciaria*

Calyx-tube little or not at all prolonged, not circumscissile, persistent with the lobes in flower and fruit; inflorescence various; ovules 2 or many.

Flowers glomerate (in clusters of about 4–6), mostly pubescent, medium-sized (buds in ours 5–12 mm. long), the clusters appearing involucrate because of the relatively large persistent bracts; calyx in the bud very shortly 4-lobed at summit, and later splitting irregularly; ovules 2. *Plinia*

Flowers glomerate to racemose, not involucrate; calyx-lobes free their whole length, or loosely coherent at base; ovules mostly numerous. *Eugenia*

Flowers solitary or in simple or compound dichasia, the primary axis of the inflorescence if once-forked with a sessile or nearly sessile flower in the fork.

Small or prostrate shrubs or subshrubs with coriaceous vaccinioid leaves 1 cm. long or less; flower solitary; bracteoles foliaceous, persistent; páramos in the Andes. . . . . *Myrteola*

Shrubs or trees with larger leaves; flowers various; middle and low elevations.

Flowers 3–7, in a dichasium; calyx-lobes 1.5 mm. long, ciliate, deciduous at anthesis with the bracts and bracteoles; southern Ecuador. *Blepharocalyx salicifolius*

Inflorescence various; calyx-lobes not ciliate and deciduous.

[Stigma peltate?; placentation parietal, the placentae introrse, bilamellate?]; flowers 1 or 3, large, long-pedunculate, the calyx-lobes 7–9 mm. long; Amazonian lowlands. . *Psidium* sp.

Stigma small and simple, hardly broader than the style; placentae simple, axillary; flowers and inflorescence various.

Flowers, if more than one, in simple or compound dichasia; if solitary only, then occurring in many or most of the mature leaf-axils, not confined to the basal nodes of a new branch. . . . . *Myrcianthes*

Flowers, if more than one, in elongate or much abbreviated racemes; if solitary only, then mostly confined to the 1–2 lowest nodes of a new branch, and often in the axils of much reduced bracts.....*Eugenia*

Key to Fruiting Material

Cotyledons foliaceous, contortuplicate; radicle elongate; testa mostly membranaceous, fragile; calyx-lobes, if present, usually 5; inflorescence compound, usually many-flowered, with branches opposite near base and irregularly ternate or solitary near tips; bracts and bracteoles rarely present (i.e., deciduous about the time of anthesis).

Calyx-lobes normally developed and present on the fruit, their basal margins contiguous; central axis of the inflorescence well developed and about as long as the primary lateral branches.....*Myrcia*

Calyx wanting (the tip of the fruit umbilicate) or represented by a shrunken calyptra attached at one side, or the calyx longitudinally ruptured below the base of the lobes and the latter irregularly margined proximally in fruit; central axis of the inflorescence often aborted at the node where the lowest lateral branches emerge.

Calyx closed in bud, calyptrate, circumscissile, the calyptra sometimes persistent in fruit or, if deciduous, the fruit umbilicate; [malpighiaceous hairs often present and conspicuous; bracts mostly deciduous].....*Calyptranthes*

Calyx closed in bud or the tips of the lobes free; lobes at maturity separated by irregular longitudinal ruptures extending nearly or quite to the summit of the ovary; fruit crowned by the unevenly margined (usually 5) often reflexed lobes, or these irregularly deciduous; [malpighiaceous hairs usually not apparent; bracts of the inflorescence often persistent on the branches after the flowers fall]..*Marlierea*

Cotyledons not as above, but small and fleshy, or large and plano-convex, or the embryo undivided; inflorescence 1- to several-flowered (flowers rarely more than 30), not branched as above; calyx-lobes usually 4 and distinct if the flowers are more than 7; bracteoles often persistent.

Cymes lateral on old wood, thrice dichotomous, 2–3 cm. long, with persistent paired bracts and a central sessile flower in each fork; calyx-lobes 4; embryo arcuate, the cotyledons hardly distinct, the testa hard, bony.....*Myrrhinium*

Inflorescence racemose or apparently the flowers glomerate, or dichasially branched, or the flowers solitary; cymes, if occasionally twice or thrice dichotomous, terminal and irregular.

Inflorescence a raceme, the flowers in opposite decussate bracteate pairs; central axis of raceme abortive at tip (the terminal flower wanting) and the axis itself often so much abbreviated that the flowers appear glomerate or umbellate in the axils; calyx-lobes usually 4.

Seeds small, numerous, with curved embryo, long radicle and short cotyledons of Subtribe Pimentinae.....*Acca*

Seeds few, one or two filling the entire fruit; embryo undivided or the cotyledons large, free, plano-convex.

Cotyledons free, plano-convex; flowers glomerate, mostly pubescent, the clusters appearing involucrate because of the relatively large persistent bracts; calyx splitting irregularly longitudinally, the lobes persistent..*Plinia*

Embryo undivided or the cotyledons partly separated; flowers, if glomerate, not involucrate; calyx various, if closed in bud then not splitting irregularly.

Calyx-tube prolonged above the ovary, circumscissile at base after anthesis and leaving a circular scar on the fruit; flowers small and nearly sessile, usually 4. *Myrciaria*

Calyx-tube not circumscissile, scarcely or not at all prolonged, the lobes persistent; flowers glomerate or in racemes.....*Eugenia*

Flowers solitary or in simple or compound dichasia, the primary axis of the inflorescence if once-forked with a sessile or nearly sessile flower in the fork; calyx-lobes 4 or 5, or the calyx irregularly longitudinally dehiscent.

Seeds one or two; embryo undivided or the cotyledons plano-convex and distinct, longer than the radicle; testa thin; calyx-lobes 4, usually distinct and persistent.

Embryo undivided; flowers solitary, or racemose in some axils.....*Eugenia*

Cotyledons fleshy, distinct, plano-convex; flowers in dichasia, or partly or all solitary.....*Myrcianthes*

Seeds several or many; embryo arcuate, uncinate or spiral, with long radicle, very short cotyledons and usually bony testa; calyx-lobes 4 or 5, or the calyx splitting irregularly.

Calyx-lobes 5, subequal, spreading; flowers solitary at leafy or leafless nodes.

Shrubs with stiff vaccinioid leaves mostly 2 cm. long or less; flowers borne at leafy nodes; bracteoles foliaceous, persistent; fruit 1 cm. in diameter or less; seeds with arcuate embryo and bony testa.

Leaves less than 1 cm. long, narrowly sagittate with inrolled margins and then apparently 1.5 mm. wide; peduncle 4–5 mm. long; filaments filiform, the anthers not sagittate.....*Myrteola acerosa*

Leaves 1–2 cm. long, elliptic, 3–8 mm. wide; peduncle 9–12 mm. long; filaments dilated and flattened, the anthers sagittate.....*Ugni*

Tree with thin leaves often 10 cm. long or more; flowers often at leafless nodes; bracteoles deciduous at anthesis; fruit 4–5 cm. in diameter; seeds with spirally involute embryo, tough membranaceous and glandular-verrucose testa.....*Campomanesia*

Calyx splitting irregularly from summit to base or the lobes 4 and distinct (if the lobes 5, the flowers 3–7 or the embryo merely curved or the testa bony).

Calyx-lobes 4 and distinct (if, rarely, 5, the leaves 2 cm. long or less and the bracteoles foliaceous and persistent).

Fruit about 5 mm. long and wide; flowers solitary; small or prostrate shrubs or subshrubs with coriaceous vaccinioid leaves 1 cm. long or less.*Myrteola*

Fruit (when known) larger; upright shrubs or trees with larger leaves.

Leaves membranaceous, glabrous; flowers 3 to 7, in a dichasium; calyx-lobes 1.5 mm. long, ciliate and deciduous with the bracts and bracteoles at anthesis; Ecuador.....*Blepharocalyx*

Leaves coriaceous, heavily pubescent to tomentose; flowers solitary or in 3's or short axillary ra-

cemes; calyx-lobes 2.5–9 mm. long, persistent; fruit ellipsoid, 8–15 mm. long.....*Acca*

Calyx splitting irregularly or with 5 lobes.....*Psidium*

Subtribe MYRCIINAE Berg

Trees or shrubs, with the inflorescence in Peruvian species cymose-paniculate, the peduncles rarely few-flowered. Calyx-lobes if distinct usually 5. Cotyledons foliaceous, contortuplicate, the radicle elongate. Ovary 2–3 (rarely –4) -locular, the ovules 2 in each locule, collateral, affixed to the central axis.

1. MARLIEREA Camb.

Reference: Berg, Linnaea 27: 12–18. 1855; and in Mart. Fl. Bras. 14, pt. 1: 31–38. 1857.

Calyx closed in the bud (or the tips of the lobes free), splitting irregularly in anthesis into 5 (–4) longitudinal lobes which are deciduous from, or subpersistent on, the fruit. Petals 5 (–4), small and inconspicuous, or none. Inflorescence-axis usually abortive above the first node, and the panicles consequently appearing paired. Bracts of the inflorescence sometimes persistent through anthesis.

A genus of more than 60 described species, mostly confined to tropical South America east of the Andes. The distinction between *Myrcia* and *Marlierea* is not a clear one, and it is probable that the latter represents a phylogenetically diverse group of species which have been somewhat arbitrarily assigned to the genus because of the irregularly splitting calyx.

Branchlets prominently 2-winged, the wings 0.5–3 mm. high, extending from just between the axillary buds at a node to the keeled or angled base of the petiole at the node above; midvein impressed above; buds glabrous, turbinate, 2 mm. long, nearly closed; calyx-lobes in fruit 4, persistent, 1.3 mm. long and wide, somewhat separated at base.....*M. bipennis*

Branchlets terete or compressed, not winged; midvein, buds and calyx various.

Midvein flat or convex on the upper surface of the leaf, up to 1–1.5 mm. broad at base, if sulcate this at base of blade only.

Inflorescence, including the hypanthium, strongly velutinous or at least with numerous loosely ascending reddish or reddish-yellow silky hairs up to 1 mm. long.

Inflorescence strongly velutinous; flowers large, the buds 7 mm. long; calyx-tips free; leaves acute or acuminate, 13–18 cm. long..... *M. velutina*

Inflorescence loosely silky-hairy; flowers small, the buds 2.5 mm. long, closed, apiculate; leaves caudate-acuminate, 4.5–7 cm. long..... *M. caudata*

Inflorescence glabrous or essentially so; at least the tips of the calyx-lobes evident in the bud.

Leaves 9–14 cm. long, 2–3.5 times as long as wide; lateral veins 12–15 pairs, the transverse veins obscurely reticulate; leaves finely and obscurely dark dotted; calyx-lobes in bud minute, ciliate..... *M. scytophylla*

Leaves 7.5 cm. long or less, 1.7–2.2 times as long as wide; lateral veins 6–8, the transverse veins prominently and coarsely reticulate; leaves with 1–3 large translucent dots per square mm.; calyx-lobes in bud distinct, the inner broadly scarious-margined, 2.5 mm. wide.... *M. areolata*

Midvein sharply and narrowly impressed on the upper surface, or in one species broad but concave or broadly sulcate.

Inflorescence, including buds, with numerous ascending lustrous yellowish-white hairs up to 1 mm. long; buds 4–5 mm. long, mostly concealed by the hairs; midvein concave or sulcate; receptacle tomentose within..... *M. spruceana*

Inflorescence pubescent, often sparsely so, with short, pale or reddish hairs 0.5 mm. long or less; buds glabrous or essentially so, 1.5–3.5 mm. long; midvein sharply and narrowly impressed; receptacle glabrous within.

Leaves cordate-auriculate, nearly sessile, the petioles 3–4 mm. long; inflorescence finely hispidulous with minute stiff erect hairs; buds closed with a prominent narrow apiculum; staminal ring short-hairy..... *M. subulata*

Leaves acute to cuneate or somewhat rounded at base, on petioles 4–10 mm. long; inflorescence pubescent with appressed or ascending hairs; buds closed or the calyx-lobes distinct; staminal ring glabrous.

Petioles transversely rimose, the reddish-brown or whitish outer papery layers separating but persistent; calyx in bud with 4 very small deltoid separate tips; lower branches of the panicle straight and much elon-

gated, spikelike with numerous sessile flowers and short squarrose bracts.....*M. umbraticola*

Petioles smooth and with unbroken surface, usually dark; buds closed or with distinct calyx-lobes; inflorescence various.

Inflorescence thinly pubescent with pale hairs; bracts and bracteoles deciduous before anthesis; lateral veins of the leaves not impressed above; buds 3–3.5 mm. long, closed at apex.....*M. imperfecta*

Inflorescence pubescent with lustrous rufous hairs; bracts and bracteoles persistent, squarrose; lateral veins impressed above; buds 1.5–2 mm. long with 5 distinct calyx-lobes.....*M. squarrosa*

Marlierea areolata McVaugh, Fieldiana Bot. 29: 175. 1956.

A shrub or tree, glabrous except the vegetative buds thinly strigose, the inflorescence with a few appressed hairs near base, the calyx-segments strigose on both surfaces near tips; leaves broadly elliptic, (2–) 3–4.5 cm. wide, (4.5–) 6–7.5 cm. long, mostly 1.7–2.2 times as long as wide, bluntly acuminate, rounded or acute at base, the margins decurrent on the petiole 1 mm. thick, 6–7 mm. long; midvein plane or convex above (the whole somewhat impressed), prominent beneath; lateral veins 6–8 pairs, somewhat elevated above, prominent beneath, the small transverse veins prominently reticulate and forming irregularly angular areoles on the order of 1 mm. across; marginal vein scarcely distinct, 2–4 mm. from margin, formed of the looped and somewhat diminished tips of the laterals, with a second, smaller and irregular submarginal vein, and numerous areoles beyond it; blades lustrous on both sides, darker and smoother above, the veins more prominent beneath; leaves with large translucent glandular dots, these 1–3 per square mm., conspicuous on both surfaces or obscure in mature leaves; inflorescence a many-flowered broad panicle, 5–7 cm. long and wide, probably always axillary but often appearing terminal, 3 times compound, usually branching 5 mm. from base or less, the axis terete or compressed, 1.5–3 mm. thick; flowers mostly solitary or in 3's on very short lateral branchlets from the secondary branches; bracts and bracteoles deciduous before anthesis; buds 3 mm. long and almost as wide, gland-dotted, darkening in drying, the body subglobose, the hypanthium narrowed at base into an ill-defined pseudostalk 0.5 mm. long; calyx-lobes 4, in bud distinct, strongly imbricated,

the outer pair rounded or bluntly triangular, 1.5 mm. long, 2 mm. wide, somewhat inclosing the much larger inner pair, which are broadly scarious-margined and irregularly erose, truncate at apex, about 1.7 mm. long, 2.5 mm. wide; calyx at anthesis explanate, the disk becoming shallowly bowl-shaped, 2.5 mm. wide, the calyx splitting slightly between the lobes or the inner lobes tearing free at base; style about 4 mm. long; stamens 75–100, about as long as the style, the anthers about 0.4 mm. long; petals 4, unequal, the larger broad and short, 2.5 mm. wide.—A distinctive species of uncertain generic position, suggesting its affinity to *Myrcia* (*Aulomyrcia*) in the large and distinct calyx-lobes, and the deciduous bracts and bracteoles. It is better referred to *Marlierea* because of the tendency of the receptacular disk to flatten after anthesis, and the accompanying distortion and splitting of the calyx, which even though slight is unlike any species of *Aulomyrcia* known to me. As a minor character may be mentioned the terminal or falsely terminal inflorescence in this species; this character recurs often throughout the genera *Calyptranthes* and *Marlierea*, whereas in *Myrcia* the panicles are more often from the lower axils. F. M. Neg. 23474.

Loreto: Stromgebiet des Ucayali von 10° S. bis zur Mündung, *G. Tessmann 3264*, anno 1923 (G, type).

Marlierea bipennis (Berg) McVaugh, Mem. N. Y. Bot. Gard. 10: 79. 1958. *Myrciaria bipennis* Berg, Linnaea 31: 259. ?1862. *Myrcia bipennis* (Berg) McVaugh, Fieldiana Bot. 29: 189. 1956.

A shrub or small tree to at least 2.5–3 meters high, with prominently 2-winged branchlets, the wings 0.5–3 mm. high, running from just above each axil and between the leaf-bases to the base of the petiole of the next node; plants nearly glabrous, closely strigose on the vegetative buds (densely) and the inflorescence and youngest shoots (thinly) with appressed lustrous rufous, narrowly fusiform, sessile and partly dibrachiate hairs up to 0.5 mm. long; scattered pale appressed fusiform hairs persistent on the lower leaf-surface; leaves elliptic to lanceolate or ovate, 3–5 cm. wide, 7–15 cm. long, (2–) 2.5–3.5 times as long as wide, narrowed from the middle or below to the shortly and often obscurely acuminate or merely acute tip, the base rounded or acute, the margins cuneately decurrent on the petiole 1–1.5 mm. thick, 3–4 mm. long; midvein impressed above, prominent beneath, keeled near base and the keel passing gradually into the wing of the branchlet; lateral veins very slender, close and parallel, about 20–25 pairs, somewhat larger than the nearly equal intermediate veins, all obscure and seen as fine lines on both surfaces;

marginal vein about equaling the laterals, nearly straight, 1 (–2) mm. from margin; blades dull olive green, very smooth but impressed-puncticulate above, markedly paler and finely dark-dotted beneath; inflorescence axillary, very short and slender, the axis less than 1 mm. long, apparently abortive, the flowering branches paired (from the lowest nodes) or with an additional pair from the next and approximate node, each branch up to 3 cm. long; rachis half as long as the branch or more, 1 mm. thick or less, gland-dotted, terete or nearly so; flowers 5–9, solitary or in 3's at the tips of the short branches up to 5 mm. long; bracteoles linear, 0.6 mm. long, deciduous before anthesis; buds (immature) narrowly obconic, 2 mm. long; flowers not seen; hypanthium (in fruit) 2.5 mm. across, glabrous within, with well-marked rim and depressed center with straight sides; stamens probably 75–100; calyx-lobes (in fruit) rounded, scarcely separated at base, about 1.3 mm. long and wide; fruit globose, 8–10 mm. in diameter, dark purple or black, very finely verruculose.—U. of Mich. Neg. 482.

Peru (probably). Amazonian Brazil (Rio Negro) and Venezuela (Río Casiquiare). This is the type-species of Sect. *Myrciopsis* McVaugh, a well-marked subgeneric taxon which is here referred to *Marlierea* rather than to *Myrcia* because of the nearly closed buds which split longitudinally between the calyx-lobes at anthesis; the presence of dibrachiate hairs; the tendency of the inflorescence to abort at the lowest node with the production of paired lateral panicles. The fruiting calyx is strongly suggestive of species of *Myrcia*. The species is readily recognized by the characteristic winged branchlets.

Marlierea caudata McVaugh, Fieldiana Bot. 29: 176. 1956.

A tree to 7 meters high, the compressed branchlets, vegetative buds, and inflorescence shaggy with numerous loosely ascending reddish or reddish-yellow silky hairs up to 1 mm. long on the buds and hypanthium; hairs on branchlets often intermixed with many short erect reddish hairs; mature leaves with a few hairs beneath, ovate or elliptic, 1.7–2.5 cm. wide, 4.5–7 cm. long, 2–3 times as long (including the acumen) as wide, about equally narrowed to both ends, the apex then prolonged into a prominent narrow acumen 3 mm. wide at base, 1–2 cm. long, the base acute to rounded, the margins decurrent on the stout petiole 1 mm. thick, 2–4 mm. long; midvein smooth and convex above, prominent but nearly flat beneath; lateral veins 12–15 pairs with numerous intermediate ones, all very slender, obscure on both surfaces; marginal vein about equaling the

laterals, less than 1 mm. from margin; both surfaces dull, obscurely and sparingly gland-dotted, the upper surface darker, and somewhat impressed-puncticulate at least when young; inflorescence axillary or terminal, the axis either abortive and 1–2 mm. long or elongate and leafy, the 1–4 flowering branches 3–5 cm. long, the slender axis somewhat compressed, about 1 mm. wide below the first node; flowers few, sessile, the flowering nodes 1 or 2 below the terminal triad, the flowers 1 or 3 on each short lateral branch; bracteoles linear, glabrous on the backs, 1.5 mm. long, appressed to the bud, deciduous after anthesis; buds about 2.5 mm. long, prominently and abruptly apiculate, obconic with long hirsute narrow base, glabrous on the hemispheric distal half, opening to the level of the stamens or a little below in 4 irregularly oblong lobes; hypanthium deeply cup-shaped, glabrous within, sparingly hairy among the bases of the stamens; style glabrous, 4.5 mm. long; stamens about 100, white, the longest 4–5 mm. long, the anthers 0.3 mm. long; petals small, obovate, white, about 0.7 mm. wide, 1.3 mm. long; fruit subglobose, 8–11 mm. in diameter; seeds reniform, 7–9 mm. long.

Loreto: Mishuyacu, near Iquitos, alt. 100 meters, forest, *G. Klug 235*, Oct.–Nov., 1929 (F, type); forest between [lower] Río Nanay and Río Napo, June 6, 1929, *L. Williams 718*.

Marlierea imperfecta McVaugh, Fieldiana Bot. 29: 176. 1956.

Tree 6 meters high, the inflorescence thinly pubescent with pale or reddish-based appressed or ascending hairs 0.2 mm. long, or longer on the vegetative buds; leaves elliptic, 4.5–7 cm. wide and 12 cm. long, or up to 9.5 cm. wide, 25 cm. long, about 2.5 times as long as wide, acuminate (often narrowly so), rounded to acute at base, the margins decurrent on the dark channeled petiole 1.5–3 mm. thick, 5–8 mm. long; midvein impressed above, prominent beneath; lateral veins 10–15 pairs and some intermediate ones, somewhat raised on both sides, more prominent (as also the reticulum formed by the small transverse veins) beneath; marginal vein about equaling the laterals and arched between them, 2–5 mm. from margin, with a faint submarginal vein beyond it; blade dark, smooth and obscurely impressed-puncticulate above, the lower surface dull, coppery brown, finely dark-dotted; inflorescence falsely terminal, the several branches apparently arising from the lowest nodes of an abortive terminal axis, each branch forming a broad panicle 8–14 cm. long and almost as broad, 3 times compound, the peduncle 2.5–4 cm. long, flattened, 1.5–2 mm. wide below the first node; branches about 5 pairs, mostly opposite; flowers sessile or nearly so, solitary or in 3's near the tips

of the branches; bracts not seen, apparently deciduous before anthesis; buds 3–3.5 mm. long, glabrous except a small apical tuft, obovate, closed and rounded or scarcely apiculate at tip, the base rather broadly obconic; calyx rupturing at anthesis and splitting into 4 irregular lobes about 1.5 mm. long and up to 2.5 mm. wide; disk glabrous, concave, about 3 mm. across; style 4–4.5 mm. long; stamens about 100, about equaling the style; petals 3–4, suborbicular, ciliate, often very broad at base but the attachment narrow, about 2.5 mm. long and broad.

Loreto: Mishuyacu, near Iquitos, alt. 100 meters, forest, Jan. 1930, *G. Klug 787* (US, type).

Marlierea scytophylla Diels, Verh. Bot. Ver. Brandenb. 48: 187. 1907.

A shrub or tree up to 8 meters high, glabrous except that the vegetative buds are finely strigose, the divisions of the calyx are ciliate and strigose within, and a few hairs sometimes persist about the base of the inflorescence; leaves elliptic, 3–5.5 cm. wide, 9–14 cm. long, 2–3.5 times as long as wide, the tips acuminate, the base cuneate, acute, or somewhat rounded above the very base where the margins are cuneately decurrent on the stout petiole 1.5 mm. thick, 5–10 mm. long; midvein convex above, 1–1.5 mm. wide at base, prominent beneath; lateral veins 12–15 pairs with some intermediate ones nearly the same size, inconspicuous above, slightly elevated beneath; marginal vein about equaling the laterals and arched between them, 1.5–2.5 mm. from the margin; blades smooth and rather dull green above, with numerous but often obscure glandular dots, the lower surface yellow-green, finely and sparingly dark-dotted; inflorescence a many-flowered axillary or falsely terminal panicle 5–8 cm. long, mostly twice-compound, the central axis longer than the lateral branches, or abortive and the lateral panicles paired; flowers mostly sessile along the spikelike branches, the longest of which are 3 cm. long and about 10-flowered; bracts broad-based, acute, 1–2.5 mm. long, at least in part persistent through anthesis and evident along the spikes as abortive flowers fall; buds 2–2.5 mm. long, obconic, open at the apex, the lobes small and ciliate; calyx opening by four irregular splits; disk glabrous, about 2.3 mm. wide; style 5–5.5 mm. long; stamens probably 75–100, 5 mm. long (Diels); fruit globose to oblate, finely glandular-verruculose, 1–1.5 cm. in diameter.—A little-known species of the Amazon Basin, readily distinguished even in fruit from similar species of *Calyptranthes* by the convex rather than impressed midvein.

An imperfect specimen with immature fruit, which was collected on the Río Nanay, Loreto (*Williams 767*), appears to be a *Marlierea* and may be the present species, but the leaves tend toward ovate rather than elliptic and the inflorescence is somewhat strigose. F. M. Neg. 23411. According to Diels' original description of *M. scytophylla* the leaves are deeply sulcate above, but, as plainly shown in the photograph, the midveins are convex rather than impressed in Ule's no. 6044, the type specimen.

Peru (probably). Amazonian Brazil and Venezuela.

Marlierea spruceana Berg, in Mart. Fl. Bras. 14, pt. 1: 34. 1857. *M. spruceana α latifolia* Berg, l.c. 515. 1859. *M. spruceana β angustifolia* Berg, l.c.

A tree up to 9 meters high, strigose on the branchlets, inflorescence and the lower surfaces of at least the young leaves with lustrous yellowish-white hairs, these up to 1 mm. long (on the buds) or often shorter, those on the leaves short, often with a few dibrachiate hairs, up to 0.5 mm. long, interspersed; leaves ovate-elliptic, often broadest a little below the middle, 6–7 cm. wide, 15–18 cm. long (or those subtending the inflorescence smaller, 2.5–4 cm. wide, 8–13 cm. long), 2–3 times as long as wide, gradually narrowed to an acuminate tip, rounded or subcuneate at base, the margins decurrent on the very stout petiole 1.5–2 mm. thick, 6–12 mm. long; midvein on the upper surface concave, sulcate at least near the base, prominent beneath; lateral veins 15–20 pairs, slender, slightly raised on both surfaces; marginal veins about equaling the laterals, slightly arched between them, 1.5–3 mm. from margin and often with a weak secondary marginal vein; leaves sometimes blackening above in drying, both surfaces dull, the glands obscure, somewhat apparent above; inflorescence terminal, forming a broad panicle with up to 200 flowers, 10–12 cm. long, 4 to 5 times compound, or the central axis abortive and the lower branches 5–8 cm. long; principal branches usually with 3–4 nodes, the peduncle 2–4 cm. long below the lowest node, compressed and 2–2.5 mm. wide below that node; flowers sessile, mostly in terminal clusters of 3; bracts and bracteoles ovate, acute, 1–3 mm. long, deciduous before anthesis; buds closed, obovoid, 4–5 mm. long, with some dark glands partly concealed among the hairs, opening irregularly into about 4 lobes which are glabrous on the inner surface; style glabrous, 7 mm. long; stamens 100–125, about 5 mm. long, the anthers 0.3 mm. long; petals 4, ovate, truncate at base, ciliate, 3 mm. wide, 4 mm. long; disk 5 mm. across in anthesis, the hypanthium deeply concave, tomentose within; fruit

globose, 1–1.5 cm. in diameter, tomentose.—Probably conspecific is *M. uaupensis* Berg, in Mart. Fl. Bras. 14, pt. 1: 516. 1859, of Colombia, which has the leaves broader (the terminal 6 cm. wide, 12.5 cm. long), short-petiolate and subcordate, the buds broadly ovoid, and the pubescence of longer and whiter hairs. F. M. Neg. 19879.

Loreto: Mishuyacu, *Klug 1411*. Amazonian Brazil and Colombia.

Marlierea squarrosa McVaugh, Fieldiana Bot. 29: 177. 1956.

A shrub 2 meters high, densely pubescent on vegetative buds and sparingly on young branchlets, petioles, and inflorescence, with appressed or ascending flexuous lustrous rufous hairs up to 0.5 mm. long; leaves broadly elliptic or somewhat ovate, 3.5–6 cm. wide, 9–13 cm. long, about 2.5 times as long as wide, rather abruptly narrowed to a slenderly acuminate tip, rounded at base, the margins decurrent on the petiole 1 mm. thick, 5–7 mm. long; midvein and 10–15 pairs of lateral veins impressed above, prominent and raised beneath; marginal vein about equaling the laterals and arched between them, not impressed above, 2–3 mm. from margin; small veins not elevated nor prominently reticulate above; leaves drying brown, dull, the upper surface darker and nearly eglandular, the lower coppery and very sparingly dotted; inflorescence a broad many-flowered axillary panicle 7–10 cm. long, 3 to 4 times compound, with up to 10 pairs of branches, the lowest up to 4 cm. long, the peduncle 2 cm. long, compressed and up to 1.5 mm. wide below the lowest node; flowers subspicate, mostly toward the tips of the branches, often subopposite, sessile, solitary or in short-peduncled clusters of 3; bracts ovate, divaricate, hairy, acute, 1–1.5 mm. long, broad-based and rounded on the backs, persistent through anthesis; buds glabrous, drying black, broadly obovoid, 1.5–2 mm. long, with numerous raised glandular dots, contracted at base to a very short pseudostalk; calyx-lobes 5, rounded, red-ciliate and appressed-pubescent within, strongly unequal, the two outer much smaller, about 0.7 mm. long and wide, the three inner up to 2 mm. wide and 1 mm. long, the calyx as a whole splitting irregularly from the bases of the lobes to the summit of the ovary; disk 1.7–2 mm. wide, glabrous, flat after anthesis; style 3.5 mm. long; stamens about 50, 3 mm. long; anthers 0.6 mm. long; petals 3, suborbicular, about 2.5 mm. long; fruit not seen.—This species, like *M. areolata*, seems to cross the supposed generic lines between *Marlierea* and *Myrcia* (*Aulomyrcia*). It has the irregularly splitting calyx, persistent bracts and explanate disk of *Marlierea*, but the coppery color and free calyx-lobes of some species of "*Aulomyrcia*." It might conceivably be a hybrid involv-

ing *Marlierea umbraticola*, which also has impressed veins in the leaves.

Loreto: Mishuyacu, *Klug 169* (US, type).

Marlierea subulata McVaugh, Fieldiana Bot. 29: 177. 1956.

Tree 5 meters high, the branchlets, inflorescence and petioles finely hispidulous with yellowish erect hairs about 0.2 mm. long, or those on the vegetative buds, base of inflorescence and base of hypanthium slightly longer and appressed; leaves ovate or lanceolate, nearly sessile, 4.5–7 cm. wide, 13–18 cm. long, 2.5–3.5 times as long as wide, narrowed toward the apex from the middle or below, and gradually acuminate, rounded and cordate-auriculate at base, the margins passing abruptly into the ventral angles of the nearly flat, hispidulous and somewhat expanded summit of the petiole 1.5–2 mm. thick, 3–4 mm. long; midvein impressed above, prominent beneath; lateral veins about 10 pairs, impressed above, prominent and scalariform beneath, the intermediate ones weak; marginal vein about equaling the laterals and markedly arched between them, 2.5–7 mm. from margin, with an indistinct submarginal vein beyond it; blades smooth, dark and lustrous above, with no glands apparent, the lower surface paler, dull, with occasional dark glands; inflorescence a rather few-flowered narrow panicle, 2 to 3 times compound, 7–15 cm. long, and up to 6 cm. wide at base; peduncle less than half as long as the whole panicle, distally flattened, 2–2.5 mm. wide; flowering nodes 5–6, the branches opposite or subopposite, the flowers solitary or in 3's on pedicels up to 5 mm. long; bracts divaricate, glabrous, subulate, up to about 3 mm. long, more or less persistent through anthesis; bracteoles similar, about 1 mm. long, somewhat appressed to the pseudostalk 0.5–1 mm. long; buds obovate, about 3 mm. long including the prominent narrow apiculum, glabrous except near base and sometimes for a tuft of small hairs crowning the apiculum, the hypanthium gradually narrowed toward the base and then abruptly rounded to the pseudostalk; calyx in bud completely closed, in anthesis splitting irregularly into 4 lobes, these up to 2 mm. long and wide, glabrous except at apex; disk cup-shaped, 2.5 mm. across, the staminal ring short-hairy; style 6 mm. long or more; stamens 75–100, about equaling the style, the anthers about 0.3 mm. long; petals 4, obovate or subrotund, 1 mm. wide, 1–1.5 mm. long, silky-villous without; fruit globose to oblate, up to 1 cm. long and 1.5 cm. across.

Loreto: Mishuyacu, near Iquitos, alt. 100 meters, forest, May, June, 1930, *G. Klug 1341* (F, type).

Marlierea umbraticola (HBK.) Berg, Linnaea 27: 17. 1855. *Myrtus umbraticola* HBK. Nov. Gen. & Sp. 7: 258 (folio ed. p. 199). 1825. *Marlierea insculpta* Diels, Verh. Bot. Ver. Brandenb. 48: 188. 1907.

A shrub or small tree 5–8 meters high, the inflorescence thickly and finely pubescent with appressed or ascending lustrous rufous or silver-tipped hairs up to 0.3 mm. long; lower leaf-surface with a few appressed pale hairs with darker bases; leaves lanceolate or elliptic, 2.5–5.5 cm. wide, 8.5–17 cm. long, (2.8–) 3–4.5 times as long as wide, the tip gradually or abruptly and often conspicuously acuminate, the base acute to cuneate or somewhat rounded, the margins decurrent on the stout, transversely rimose petiole 1.5–2 mm. thick, 4–10 mm. long; petiole at maturity with the outer layers smooth and reddish brown, cracking transversely and at length longitudinally, separating and persisting; midvein impressed above, elevated nearly its own thickness beneath; lateral veins 20–25 pairs, never prominent but the major ones slightly impressed as delicate lines above, slightly raised beneath; marginal vein about equaling the laterals or slightly weaker, arched between them, 1–2.5 mm. from margin; blades dark and lustrous but without apparent glands above, dull green or brown, and finely dark-dotted beneath; inflorescence a many-flowered axillary panicle 7–10 cm. long, mostly twice compound with the flowers sessile or nearly so along the slender divaricate branches, the lowest of which may be as long as the central branch or even longer; peduncle 1–2 cm. long, terete or slightly compressed, usually rimose like the petioles, 1–2.5 mm. thick; branches straight, slender, up to 10 cm. long and with more than 40 flowers in bracteate, opposite or sometimes alternate pairs; bracts persistent, squarrose, ovate, broad-based and somewhat surrounding the buds, acute, 1 mm. long or less; buds 2–2.5 mm. long, dark or black in drying, glabrous except the ciliate tips, broadly obovoid, the hypanthium obconic, the tip rounded; calyx-lobes 4, approximate in the bud, very small, with deltoid ciliate tips, the calyx splitting irregularly at anthesis between the lobes into irregular glabrous divisions about 2.5 mm. long and 2 mm. wide; disk glabrous; style 4–5 mm. long; stamens 60–75, about 4 mm. long, the anthers 0.3 mm. long; fruit globose, smooth or minutely verruculose, 5–10 mm. in diameter.—A commonly collected species of the basins of the Orinoco and Casiquiare rivers in Colombia and Venezuela, and known also from various stations in Amazonian Brazil; the type of *M. insculpta* came from Marary on the upper Rio Juruá, *Ule 5080, 5081*. F. M. Negs. 23407, 36908.

Peru (probably). Amazonian Bolivia and Brazil to Venezuela, and eastern Colombia.

Marlierea velutina McVaugh, Fieldiana Bot. 29: 178. 1956.

A shrub or tree, densely velutinous on the branchlets, inflorescence, buds, and petioles with coarse sharp erect yellowish brown hairs up to 1 mm. long; leaves on both surfaces thinly hirsutulous with similar hairs; leaves elliptic, oblong, or lanceolate, 4–6 cm. wide, 13–18 cm. long, about 3 times as long as wide, acute or shortly and slenderly acuminate at tip, narrowly rounded at base, the margins decurrent on the stout petiole 1.5–2 mm. thick, 5–7 mm. long; midvein flat above or sulcate near base, velutinous, prominent and elevated its own diameter beneath; lateral veins about 20 pairs, slightly elevated above, prominulous beneath; marginal vein about equaling the laterals, somewhat arched between them, 1.5–3 mm. from margin; blades at maturity dull, dark and obscurely punctate above, yellow green or brown and hairy beneath, without apparent glands; inflorescence of many-flowered, 2 or 3 times compound, axillary or falsely terminal panicles 6–10 cm. long, the flowers solitary or in 3's near the tips of the branches; peduncle 3.5–5 cm. long, compressed, 2.5 mm. wide below the first branches; primary branches 1.5–2.5 cm. long, the lateral pedicels 3–5 mm. long, the central flowers sessile or nearly so; bracts and bracteoles deciduous before anthesis, linear, 2–3 mm. long; buds probably about 7 mm. long, not seen; hypanthium 3–4 mm. long, broadly ellipsoid or urceolate to subglobose, with about 8 prominent longitudinal ridges; calyx-lobes in bud united, with free, bluntly deltoid tips about 1 mm. long, 1.5 mm. wide, the calyx in anthesis splitting irregularly into 4 somewhat elliptic lobes 2–3 mm. wide, 3–4 mm. long, the split extending into the edge of the staminal disk and the margin of the disk recurved with the lobes; disk about 4 mm. wide, deeply depressed at center, velutinous; style 7 mm. long, hairy two-thirds of its length; stamens very numerous, probably about 200; petals obovate-cuneate, 2 mm. wide, 3 mm. long; ovary bilocular, with 2 ovules in each locule.—Known only from the type, *Rusby 2683*, collected at the falls of the Rio Madeira, Brazil.

Peru (probably). Amazonian Brazil.

2. CALYPTRANTHES Swartz

Reference: Berg, Linnaea 27: 18–33. 1855; and in Mart. Fl. Bras. 14, pt. 1: 38–55. 1857.

Calyx completely closed in the bud, circumscissile, the operculum usually attached at one side in anthesis, finally completely dehiscent. Petals none, or in a few species 2–3 (–5), small and inconspicuous. Inflorescence-axis usually abortive above the first node, with the paired panicles arising from opposite axils at the lowest nodes of the axis. Pubescence usually at least in part of dibrachiate hairs.

A distinctive genus of perhaps 50–75 species, ranging from Florida through the West Indies and eastern South America to Uruguay. Early reports of this genus from Asia were based primarily on species now referred to *Syzygium* Gaertn., a genus of the Eugeniinae.

Flowers very large for the genus, the buds 7–8 mm. long, convex or nearly flat at the apex, lacking a narrow apiculum; inflorescence pale-scurfy and also appressed-puberulent with minute brownish dibrachiate hairs 0.1 mm. long; leaves 25–39 cm. long, narrowly elliptic, nearly sessile, appearing cordate-auriculate at base, the stout petiole 4 mm. long..... *C. maxima*

Flowers smaller, the buds if 5 mm. long or more fusiform and apiculate, or noticeably hirsute or velutinous; inflorescence glabrous to hairy; leaves usually smaller and slender-petiolate, if sessile or essentially so the buds not as above.

Leaves sessile, with veins impressed on the upper surface; blades cordate at base or the margins much produced and plicate.

Leaves ovate, cordate, 9–12 cm. long; inflorescence glabrous; buds fusiform, 6–7 mm. long..... *C. sessilis*

Leaves obovate, with the margins near base produced into puckered folds, the blades 30–38 cm. long; inflorescence appressed-hirsutulous; buds 3.5 mm. long, obovoid. *C. plicata*

Leaves petiolate, cuneate to acute or somewhat rounded at base, the veins usually not impressed.

Inflorescence of paired spikes, the individual flowers sessile along the axis or the lowest in sessile or very short-peduncled groups of three.

Buds glabrous; leaves 2.5–6 cm. long, often obovate with rounded or sometimes short-acuminate tip; flowers mostly 3 or 5 (–11) in each spike..... *C. pulchella*

Buds strigose or hirsute; leaves 7–16 cm. long, elliptic to ovate, usually prominently and often narrowly acuminate; flowers more numerous.

Branchlets and inflorescence, including the buds, thickly rufous-hirsute; buds broadly obovoid to nearly globose, 5–6 mm. long, concealed by the hairs; flowers 8–13 in each spike..... *C. krugioides*

Branchlets and inflorescence with appressed yellow or brown dibrachiate hairs; buds obovoid or broadly fusiform, 2–2.5 mm. long, rather sparingly hairy.

Spikes mostly 8–12 cm. long, the numerous flowers in several sessile clusters of 10–20 flowers each; leaves short-acuminate, the lateral veins not impressed above, slender and closely parallel..... *C. densiflora*

Spikes 3–5.5 cm. long, the flowers 25 or fewer on each, in small sessile clusters of 1–3 each; leaves with narrow acumen 1.5–2 cm. long; lateral veins impressed above, the principal ones prominent beneath and contrasting with the less conspicuous intermediates. *C. brevispicata*

Inflorescence of paired panicles or compound dichasia, the basal branches elongated and again branched, or occasionally with solitary terminal flowers.

Branches of the inflorescence uniformly but sometimes thinly beset with appressed or erect hairs; hypanthium variously strigose to tomentose, except in *C. multiflora*.

Hypanthium glabrous; inflorescence loosely pubescent with numerous erect or somewhat appressed soft pale rufous hairs; midvein convex above; buds 2–2.5 mm. long. *C. multiflora*

Hypanthium strigose or variously velutinous or tomentose, if nearly glabrous the midvein sulcate or narrowly impressed above.

Inflorescence-branch an umbelliform cyme 2–5 cm. long with 15 flowers or fewer, the ovate boat-shaped bracts subfoliaceous, persistent; inflorescence, including the flowers, thickly hirsute with coarse rufous sessile dibrachiate hairs up to 1.5–2 mm. long and attached near one end..... *C. longifolia*

Inflorescence-branch paniculate or by reduction racemose, often 3 to 4 times compound and many-flowered (if short and few-flowered not hirsute as above); bracts completely deciduous before anthe-

sis or occasionally a few (especially the basal ones) persisting; hairs of the inflorescence various, mostly sessile and less than 1 mm. long.

Hairs of the inflorescence golden-yellow, dibrachiate, up to more than 1 mm. long, the basal stalk of the hair erect and often as long as the spreading or ascending branches; leaves 6 cm. long or less, rounded to obscurely acuminate at tip; branchlets 2-winged; flowers mostly 10 or fewer on each branch..... *C. tridymantha*

Hairs of the inflorescence sessile and somewhat appressed and mostly less than 0.5 mm. long, or with very short hairs intermixed, or the inflorescence velutinous or tomentose, usually with red or rusty hairs.

Leaves large, mostly more than 15 cm. long (often 20–30 cm. long), with 20–35 pairs of lateral veins; buds obovoid or obconic, scarcely apiculate, 3–5 mm. long; inflorescence with abundant rufous pubescence.

Lateral and marginal veins scarcely apparent on lower leaf-surface, the surface covered with very numerous, closely appressed pale hairs up to 0.2 mm. long; blades tapering from the middle or below to a slender apex; inflorescence 5 cm. long or less, few-flowered. *C. macrophylla*

Lateral and marginal veins forming a conspicuous gridiron pattern on the lower leaf-surface, which is glabrous or sparingly appressed-pubescent at maturity; blades abruptly and narrowly acuminate; inflorescence 6–10 cm. long, many-flowered..... *C. speciosa*

Leaves of moderate size, usually less than 20 cm. long or, if longer, the lateral veins 15 pairs or fewer, or the buds 2–2.5 mm. long; buds and pubescence various.

Flowers small, the buds 2–2.5 mm. long, obovoid, the apex rounded or shortly apiculate; panicles mostly 3 times compound, many-flowered, the branches sparingly covered with

appressed pale or sometimes reddish hairs, the hypanthium strigose, sometimes very sparingly so; paired panicles from an abortive flattened axis 10 mm. long or less.

Lower leaf-surfaces with few dark hairs and usually with rather numerous persistent, nearly colorless appressed hairs; leaves elliptic, broadest at the middle, 5–10 cm. long with 12–15 lateral veins on each side; style 4–4.5 mm. long..... *C. ruiziana*

Lower leaf-surfaces glabrous except for a few dark hairs; leaves ovate or lanceolate, usually widest somewhat below the middle, 9–15 (–25) cm. long, with 20–25 pairs of veins on each side; style 5–6 mm. long. *C. simulata*

Flowers larger, the buds 3–6 mm. long, variously shaped; panicle compound, or by reduction racemoid, its branches and the hypanthium uniformly and usually conspicuously appressed-hairy, velutinous or tomentose with ferruginous or dark reddish hairs; panicles various.

Inflorescence-branch a spike with all flowers sessile, or the lower branches 1–2 cm. long, 1- or 3-flowered; buds 5–6 mm. long, abundantly hirsute, the hypanthium hairy within..... *C. krugioides*

Inflorescence-branch a panicle, usually many-flowered and 3 times compound; buds 3–4 mm. long, appressed-hairy to tomentose, the hypanthium glabrous within.

Midvein impressed above; hypanthium appressed-hairy, the hairs of the inflorescence rusty-brown; buds fusiform, 3–3.5 mm. long; panicle narrow, the lowest branches about 1.5 cm. long. *C. tessmannii*

Midvein convex above (and then sometimes sulcate) or raised in a narrow ridge; hypanthium loosely velutinous or tomen-

tose; buds obovoid or ellipsoid; lower branches of the panicle relatively long.

Leaves 15–21 cm. long, about 4 times as long as wide, the straight marginal vein and the 10–15 short lateral veins prominent beneath; petiole very stout, 3 mm. thick, 7 mm. long; buds broadly ellipsoid, heavily tomentose with dark red hairs, the hypanthium urceolate in anthesis..... *C. rufotomentosa*

Leaves 10–16 cm. long, about 2.5 times as long as wide, the marginal vein consisting of a series of loops or arches between the 8–12 pairs of laterals; petiole 1 mm. thick, 8–10 mm. long; buds obovoid, sparingly or rather densely velutinous with rusty-brown or reddish hairs, the hypanthium probably turbinate in anthesis.
C. cuspidata

Branches of the inflorescence (including the hypanthium) completely glabrous or with a very few scattered hairs about the base and the nodes of the panicle.

Panicles with 20 flowers or fewer, sometimes reduced and raceme-like or spikelike; peduncle and rachis filiform or very slender, often terete and nearly straight, usually less than 1 mm. thick; branchlets narrowly 2-winged.

Flowers mostly sessile on the axis, only the lower clusters pedunculate; wings of the branchlets often 0.5 mm. high; buds 4–7 mm. long, obtuse or obscurely apiculate..... *C. pulchella*

Flowers mostly on very long slender pedicels; wings of the branchlets scarcely higher than thick; buds 2–3 mm. long, narrowly and conspicuously apiculate.
C. bipennis

Panicles many-flowered, 3 to 4 times compound, the peduncle usually somewhat angular near summit and 1–1.5 mm. thick, the rachis often irregularly enlarged and zigzag; wings, if produced on branchlets, not persisting through the growing season.

Lower leaf-surface obscurely gland-dotted, the dots about 15 per square mm.; leaves relatively narrow, mostly 2.5 times as long as broad, or longer; panicle-branches irregularly alternate..... *C. paniculata*

Lower leaf-surface prominently dark-dotted, the dots more than 50 per square mm.; leaves broader, mostly 2.3 times as long as broad, or less; panicle-branches, both large and small, often verticillate or fasciculate. *C. crebra*

Calyptranthes bipennis Berg, Linnaea 31: 248. ?1862.

A shrub or tree up to 15 meters high, glabrous except for a few hairs on the young terminal vegetative buds; young leafy branchlets 2-winged, the wings up to about 0.2 mm. high, arising just above the axil at one node and terminating in stipule-like tips up to 1 mm. long between the petiole bases at the node above; leaves elliptic, lanceolate or ovate, (1–) 2–5 cm. wide, 3–7 (–11) cm. long, 2–3 (–4) times as long as wide, acuminate (often slenderly so), the base cuneate, or rounded and finally subcuneate, the margins decurrent on the petiole 2–3 mm. long and up to 1 mm. thick; midvein prominent beneath, on the upper surface broadly impressed near base in a rounded channel, plane near the tip; lateral veins slender, slightly raised on both surfaces or but obscurely so above, about 10–12 principal pairs but with relatively strong intermediate veins, the blade thus often seeming to have numerous close parallel veins; marginal vein continuous, 0.5–1 (–2) mm. from margin, little arched between the laterals; leaves dull and pale green in drying, or the lower surface pale brown; upper surface smooth, usually with at least a few impressed dots; lower surface more or less prominently brown dotted; inflorescence axillary, the axis either abortive and 0.5–2 mm. long, or elongate and leafy; flowering branches 2, opposite, arising from the lowest nodes of the axis, filiform, 2–5 (–9) cm. long, 0.2–0.7 mm. thick below the nodes, 1 to 3 times compound; peduncle 9–22 mm. long; nodes of the flowering axis 1–3, the pedicels filiform, 2–7 mm. long, 1-flowered or with 2 or 3 nearly sessile flowers at the tip; bract at base of flowering branch linear, 0.7 mm. wide, 1.7 mm. long; other bracts and bracteoles not seen; buds obovoid, prominently gland-dotted, attenuate at base at least when young, 2–3 mm. long, narrowly apiculate, the apiculum often conspicuous; calyptra about one-third as long as the unopened bud; style 3–5 mm. long; petals none; stamens about 75, up to 4 mm. long; fruit globose, 5–7 mm. in

diameter.—The several collections which I should refer to this species show unusual variation in size of leaves, but are otherwise so similar that there is little doubt that they are conspecific. The type specimen, which is in young bud only, bears small and narrow leaves up to 1 cm. wide and 4 cm. long. The inflorescences are poorly developed, each branch bearing three pedicellate flowers only. Superficially this specimen bears little resemblance to such large-leaved examples as those in Killip & Smith's no. 27702 and Krukoff's nos. 5203 and 5205, but in characters other than leaf-size there is good agreement. The development of the inflorescence and the presence of 1-flowered or 3-flowered pedicels evidently vary from plant to plant, and under conditions which affect vigor and development; in some cases both 1-flowered and 3-flowered pedicels are found on the same plant, and I regard as taxonomically unimportant, in this case, the difference between the 3-flowered cymes of the type specimen, and the approximately 20-flowered panicle-like branches of Killip & Smith's no. 27702. The type specimen of *C. bipennis* apparently is merely a small-leaved extreme, collected at an early stage in development, of a species population which is widespread and relatively uniform in Brazilian Amazonia and adjacent Peru. Univ. of Mich. Neg. 430.

San Martín: Tarapoto, *Williams 6584*.—Loreto: Yurimaguas, *Killip & Smith 27702*. Fl. Huallaga ad cataractas, July, 1856, *Spruce 4596*, type. Amazonian Brazil.

Calyptranthes brevispicata McVaugh, Fieldiana Bot. 29: 181. 1956.

A tree 4 meters high, the branchlets, inflorescence, petioles and lower leaf-surfaces sparingly covered with appressed fusiform yellowish brown dibrachiate hairs up to 0.5 mm. long (or to 1 mm. long on the midvein); leaves elliptic-lanceolate, 3.5–5 cm. wide, 11–15 cm. long, about 3 times as long as wide, narrowed toward the apex from about the middle, gradually or rather abruptly long-acuminate, the tip 3 mm. wide at base, 1.5–2 cm. long; base of blade acute and finally cuneate, the margins decurrent on the stout petiole 1.5 mm. thick, 8 mm. long; midvein sharply sulcate and impressed above, prominently elevated beneath; lateral veins 20 or more pairs, impressed above, prominent beneath and contrasting with the smaller and less conspicuous intermediate veins; marginal vein nearly straight, about equaling the laterals, 2–3 mm. from margin, slightly impressed above and prominently elevated beneath, a smaller but distinct submarginal vein beyond it; blades somewhat lustrous, green and impressed-puncticulate above, somewhat yellowish beneath,

with small dark dots and numerous appressed hairs; inflorescence axillary, the axis very short and flat, about 2 mm. long and wide, the flowering branches 2, spicate, 3–5.5 cm. long, from the lowest nodes of the axis, the peduncle short, about 1 cm. long, nearly terete, 1–1.3 mm. thick below the first node; flowers 25 or fewer on each branch, 1–3 in small sessile clusters at the 3–4 principal nodes and the tip; bracts deciduous before anthesis; buds about 2.5 mm. long, broadly fusiform, brown-hairy and somewhat arachnoid-pubescent, broadly and sometimes obscurely apiculate; calyptra domelike; hypanthium after dehiscence broadly campanulate, 1.5 mm. high, about 2 mm. across the rim; style 6 mm. long; stamens about 50, white, to 6 mm. long, the anthers 0.3 mm. long.—Univ. of Mich. Neg. 454.

Loreto: Florida, Río Putumayo, at mouth of Río Zubineta, alt. 200 meters, forest, March–April, 1931, *G. Klug 2040* (US, type).

Calyptranthes crebra McVaugh, Fieldiana Bot. 29: 181. 1956.

Tree 4–10 meters high, completely glabrous or the vegetative buds strigose with reddish fusiform dibrachiate hairs up to 0.5 mm. long, and a few similar hairs persistent at the base and about the nodes of the inflorescence; leaves elliptic to ovate, 4–5 cm. wide, 8.5–10.5 cm. long, about 1.8–2.3 times as long as wide, short-acuminate, the base cuneate, the margins decurrent on the stout petiole 1–1.5 mm. thick, 4–5 mm. long; midvein broadly sulcate above, prominent beneath; lateral veins 12–15 pairs in addition to the scarcely less conspicuous intermediates, slightly elevated on both surfaces but obscure on both; marginal vein about equaling the laterals, nearly straight, 1.5–2 mm. from margin; upper surface olive green to brown in drying, impressed-puncticulate, the lower pale or dark tan, with abundant (more than 50 per square mm.) dark prominent glands; inflorescence axillary or falsely terminal, the axis about 1 mm. long, the 2 flowering branches from the lowest nodes, 5–11 cm. long, mostly 3 times compound, many-flowered, the peduncle often half as long as the entire inflorescence, terete, 1 mm. thick or a little more; lowest branches of the panicle sub-verticillate, three larger and as many smaller arising nearly together; upper nodes mostly alternate and enlarged, the branchlets often fasciculate, the rachis zigzag and flattened; flowers yellow-green (Klug), near tips in 3's or in clusters up to 10; bracts deciduous before anthesis; buds 2 mm. long or less, obovate, somewhat expanded above the middle, shortly apiculate; hypanthium after dehiscence broadly campanulate, about 1.3 mm. long and 1.5 mm. wide; calyptra concave; style 5 mm. long; stamens 60–75, about as long as the style; anthers about 0.2 mm.

long; fruit globose, about 5 mm. in diameter, finely glandular-verruculose, surmounted by the very short flaring neck of the hypanthium.—Univ. of Mich. Neg. 470.

Loreto: Mishuyacu, near Iquitos, forest, alt. 100 meters, October–November, 1929, *G. Klug 77, 78* (F, type), *607*.

Calyptranthes cuspidata DC. Prodr. 3: 258. 1828.

Probably a tree, the vegetative buds, petioles, branchlets and inflorescence velutinous with rusty brown or light reddish brown partly dibrachiate hairs up to 0.5 mm. long; leaves glabrous both sides, elliptic or oblanceolate, 4–5 cm. wide, 10–16 cm. long, about 2.5 times as long as wide, at apex cuspidate-acuminate with acumen 1–1.5 cm. long, the base acute, the margins decurrent on the channeled petiole 1 mm. thick, 8–10 mm. long; midvein convex or narrowly sulcate above, prominent beneath; lateral veins 8–12 pairs, sometimes with nearly similar intermediate veins, slightly convex on both sides of the blade; marginal vein about equaling the laterals and arched between them, or scarcely forming a distinct vein, 2–4 mm. from margin, often with smaller veins evident beyond it; blade smooth and featureless above, paler and dull beneath with pale inconspicuous glandular dots; inflorescence to 10 cm. long, 3 times compound, many-flowered; flowers sessile, clustered near the tips of the branches; buds 3.2–4 mm. long, obovoid, the calyptra rounded and domelike, punctate, and (in the type) glabrate; hypanthium markedly produced beyond the ovary, the orifice about 1 mm. across; stamens probably 50–75.—The type, which I saw in Munich in 1954, bears both buds and opening flowers; it is labeled "Rio dos Enganos, in flumen Japurá, Provinciae Rio Negro," *Martius* (F. M. Neg. 19884). Krukoff's no. 6221 (NY, US), from the State of Amazonas, Mun. Humayta, near Tres Casas, is referred to this species with some doubt. It is said to be a tree 60 feet high; the plants are in young bud with inflorescence scarcely developed. The foliage closely resembles that of the type of *C. cuspidata*, but the inflorescence appears to be more strongly velutinous than in the Martius specimen.

Peru (probably). Amazonian Brazil.

Calyptranthes densiflora Poepp. ex Berg, Linnaea 27: 30. 1855.

A tree 4–7 meters high, sparsely covered in the inflorescence and on the lower leaf-surfaces with brownish-yellow fusiform sessile but rather loosely appressed dibrachiate hairs up to 0.8 mm. long on

the midvein and about 0.5 mm. long on the inflorescence; leaves elliptic or ovate, 3–5.5 cm. wide, 7–13 cm. long, 2–2.5 times as long as wide, acuminate, the base acute to rounded, the margins decurrent on the stout petiole 1–1.5 mm. thick, 5–6 mm. long; midvein impressed or sharply sulcate above, prominent beneath; lateral veins 15–20 pairs, slender and close with numerous intermediate veins, obscure above, more distinct beneath; marginal vein about equaling the laterals, 1.5–2 (–3.5) mm. from margin; leaves nearly concolorous, lustrous and smooth and obscurely impressed-puncticulate above, slightly more yellowish-green or -brown beneath, the surface rather sparingly dotted with small glands, often with pale appressed hairs and some brownish-yellow dibrachiate hairs; inflorescence axillary, the axis flattened, 2–4 mm. long and at least 2–3 mm. wide; flowering branches 2, spicate, (3–) 8–12 cm. long, opposite, arising from the lowest nodes of the axis, the peduncle about half as long as the entire branch, angled but scarcely compressed, 2–2.5 mm. thick just below the first node; flowers sessile in clusters of 10–20 at each of 3–5 nodes and at the tips, the clusters sub-opposite or usually some or all of them alternate, the axis often zigzag; bracts about half as many as the flowers and simulating an involucre about the clusters, 1–2.5 mm. wide, 2–3 mm. long, obovate, cucullate, glabrous on the inner surface; buds 2–2.5 mm. long, obovoid, gland-dotted, not apiculate, strigose with lustrous golden or somewhat arachnoid hairs; calyptra 1.5–2 mm. across, explanate; hypanthium hollow nearly to the base of the bud, the walls thin and collapsing after anthesis; style 5–6 mm. long; stamens 30–40, up to 5 mm. long, the anthers 0.4–0.5 mm. long; fruit (according to Poeppig) smaller than a pea, globose, crowned with the tubular hypanthium.—F.M. Neg. 31509.

San Martín: Zepelacio near Moyobamba, *Klug 3307, 3747.* In sylvis ad Mission Tocache, *Poeppig 2019* (type, herb. Wien).

In Poeppig's original specimen, which I have seen through the kindness of Dr. Rechinger, the spikes are apparently somewhat undeveloped and perhaps abnormal; they are about 1.5 cm. long, each with 25–40 flowers closely packed in a sub-cylindric cluster.

Calyptranthes krugioides McVaugh, Fieldiana Bot. 29: 182. 1956.

Tree to 20 meters high, the branchlets and inflorescence thickly rufous-hirsute with coarse flexuous hairs about 0.5 mm. long; midvein above densely and veins beneath sparingly hairy in young foliage; leaves elliptic or ovate, 2.5–6.5 cm. wide, 10–16 cm. long, 2.5–3 (–4) times as long as wide, about equally and often abruptly narrowed

to the slenderly or caudately acuminate tip, and to the rounded or subcuneate base, the margins decurrent on the stout petiole 1.5–2 mm. thick and 5–11 mm. long; principal veins impressed above, the midvein sulcate but raised in a narrow central line in this groove; veins prominent beneath, the principal laterals 10–12 pairs, the marginal vein about equaling the laterals, 2–4 mm. from the margin; leaves drying brown, dull, the upper surface smooth and without evident glands, the lower lighter in color, minutely dark-dotted; inflorescences axillary, paired, spikelike, 5–6 cm. long, the axis with 3–4 flowering nodes, about 1 mm. in diameter but appearing more than 2 mm. thick because of the hairs; flowers distant, 8–13 in each spike, at the upper nodes solitary and sessile, at the lower nodes in groups of 3 on a common branch 3 mm. long; bracteoles ovate, acute, about 2.5 mm. long; buds broadly obovoid to nearly globose, 5–6 mm. long, obscurely apiculate, completely concealed by the hairs; calyptra about 3.5 mm. high; hypanthium cup-shaped, sparingly strigose within; style 8 mm. long, glabrous or with a few hairs at base; stamens 125–150, nearly as long as the style, the anthers 0.5 mm. long; petals 3, elliptic, rounded at the apex, 3 mm. wide and 4 mm. long in the mature bud; fruit not seen.—The name is given in reference to the superficial resemblance between this species and *Krugia ferruginea*, of northern South America and the West Indies. Univ. of Mich. Neg. 465.

Loreto: Iquitos, edge of lake, October 11, 1929, alt. 120 meters, *Williams 3675* (F, type). Amazonian Brazil (basin of Rio Juruá, *Krukoff 5041*).

Calyptranthes longifolia Berg, in Mart. Fl. Bras. 14, pt. 1: 46. 1857. *C. pleophlebia* Diels, Verh. Bot. Ver. Brandenb. 48: 188. 1907.

Shrub to 3 meters high, thickly appressed-hairy in the inflorescence, on the young branchlets and buds and petioles, with coarse rufous mostly dibrachiate hairs up to 1.5 (–2) mm. long; leaves at least when young with a few long hairs beneath; leaves elliptic or lanceolate, 4–6.5 (–8) cm. wide, 10–25 cm. long, 2.5–4.5 times as long as wide, gradually or abruptly acuminate at tip, rounded or often subcuneate at base, the margins decurrent on the stout short petiole 1.5–2.5 mm. thick, 4–6 (–8) mm. long; midvein impressed above, prominent beneath; lateral veins 15–20 pairs, like the marginal vein usually somewhat impressed above and rather prominent beneath; marginal vein about equaling the laterals, somewhat arched

between them, 2–5 (–10) mm. from the margin; leaves rather dull when dry, at least the lower surface turning pale brown; upper surface smooth or inconspicuously impressed-puncticulate; lower surface sparingly glandular; inflorescence a pair of few-flowered stout cymes 2–5 cm. long, the axis 1.5 mm. thick, from the lowest nodes of an axillary branch, this branch aborting or (usually, in the specimens seen) elongating and becoming leafy at tip, the cymes appearing lateral and supra-axillary; cymes about 15- or fewer-flowered, with 1–5 (usually 2–3) nodes, each with an oblong or bluntly triangular bract, 3–3.5 mm. wide and 4–15 mm. long, at base; flowers sessile, mostly in crowded laterally compressed bracteate clusters of 3 to 5 at the tips of the branches; bracts ovate, rounded on the back, acute, 2–3.5 mm. long, persistent until the fruit is grown; buds about 2.5 mm. long, obovoid, very shortly apiculate, completely hidden by the abundant hairs; calyptra explanate at anthesis, about 2 mm. wide; style undeveloped in specimens examined; stamens about 75, 3–4 mm. long; fruit purple (Killip & Smith), probably globose, about 1.5 cm. in diameter, 1-seeded, the seed kidney-shaped, 1 cm. long.—As already pointed out by Amshoff (Med. Bot. Mus. Rijksuniv. Utrecht 86: 150. 1942), the flowers of a closely related species, *Calyptranthes fasciculata* Berg, are often unisexual. A similar condition apparently prevails in the present species, and in *C. speciosa* var. *gigantifolia*. F.M. Negs. 23383, 23388.

San Martín: Chazuta, Río Huallaga, *Klug 4103*.—Loreto: Yurimaguas, *Poeppig 2162*, type; *Williams 4666*. Stromgebiet des Ucayali von 10° S. bis zur Mündung, *Tessmann 3432* (F.M. Neg. 23394). Cerro de Escaler, 1300 meters, *Ule 6751*, type of *C. pleophlebia*. Junín: Colonia Perene, *Killip & Smith 24933*. Bolivia.

Calyptranthes macrophylla Berg, in Mart. Fl. Bras. 14, pt. 1: 45. 1857.

A shrub or tree to 5–6 meters high, the inflorescence covered with dark rusty fusiform, closely appressed dibrachiate hairs 0.3 mm. long; lower leaf-surface covered with very numerous, closely appressed lustrous pale hairs 0.1–0.2 mm. long, mixed with a few darker dibrachiate hairs, these on the midrib up to 0.5 mm. long; leaves ovate or ovate-lanceolate, 5.5–9 cm. wide, 18–24 cm. long, 2.7–4.2 times as long as wide, narrowed from the middle or below to the long-acute or gradually long-acuminate tip, rounded at base, the margins decurrent on the stout pubescent petiole 2.5 mm. thick, 10–12 mm. long; midvein impressed or sulcate above, raised its own thickness beneath; lateral veins very slender, 30–35 pairs, very

slightly elevated both sides; marginal vein nearly straight, about equaling the laterals, 1.5–2 mm. from the inrolled margin; blades lustrous, greenish-brown or darker and minutely impressed-punctic-ulate above, pale tan and somewhat lustrous beneath from the covering of small hairs which also nearly cover the numerous small dark glands; inflorescence axillary, the axis flattened and short, 3–10 mm. long, 2–3 mm. wide; flowering branches 1.5–6.5 cm. long, only the two lateral developed, or also a third representing the principal axis of the flowering branch; each branch 5- to many-flowered, the flowers sessile or on pedicels 2.5 mm. long; bracts lance-linear, about 5 mm. long, probably deciduous at anthesis; buds obconic, scarcely apiculate, 3–4 mm. long; disk in fruit sunken, glabrous, about 3 mm. wide; fruit globose, 7–11 mm. in diameter, the hypanthium prolonged into a cylindrical neck 1–1.5 mm. long, 2–2.5 mm. wide; calyptra sometimes persistent on the fruit, explanate, 2.5 mm. across.—Flowering specimens of this species have apparently not been recently collected, but the species itself is well known from the upper Amazon region of Brazil and from nearby Venezuela. The Krukoff specimen cited below is included with some doubt as to its identity; the leaves are sparsely pubescent, and slightly more prominently acuminate than in the other specimens seen; the flowers are more numerous, and the pubescence of the inflorescence is of relatively loose and pale hairs; possibly it represents a distinct species but this cannot be determined with certainty from the material, which is in bud only, and with over-mature and weathered foliage. F.M. Neg. 31510. (See also a note under *C. speciosa*.)

Río Acre: Near mouth of Rio Macauhan, *Krukoff 5498*. Amazonian Brazil to Venezuela.

Calyptranthes maxima McVaugh, Fieldiana Bot. 29: 182. 1956.

A small tree, the branchlets and inflorescence puberulent with minute appressed brownish dibrachiate hairs about 0.1 mm. long, the inflorescence (and especially the hypanthium) pale scurfy as well; leaves elliptic, thin in texture, 7.5–10.5 cm. wide, 25–39 cm. long, 3.5–4 times as long as wide, about equally narrowed to both ends, acuminate at tip, appearing cordate-auriculate at base when dry; petioles dark and stout, about 3 mm. thick, 4 mm. long, the thickened portion extending 5–6 mm. beneath the blade and there merging into the unmodified midvein, the whole petiole depressed below the plane of the base of the leaf and lying in a short steep-sided furrow; midvein centrally sulcate, but elevated on the upper surface,

prominent beneath; lateral veins very slender, 25–35 pairs in addition to some intermediates, convex on both sides, more conspicuous beneath; marginal vein about equaling the laterals, nearly straight, 2–4 mm. from margin; blades pale green and lustrous above, paler and with small dark glandular dots beneath; inflorescence from the terminal node of a stout terminal bracteate shoot 1.5 cm. long; bracts of the shoot scarious, coriaceous, lance-attenuate, 6 mm. wide, 15–25 mm. long; bracteoles scarious, linear, blunt-tipped, 2.5 mm. wide and 7 mm. long, deciduous at anthesis; inflorescence branches solitary, 6–10 cm. long, 1 to 2 times compound, 6- to 11-flowered, on stout compressed peduncles 3.5 mm. wide below the first node; lower divisions of the primary branch 8 mm. long, 3-flowered; all flowers except the terminal one on flat pedicel-like branchlets 2–3 mm. long, 2 mm. wide; buds 7–8 mm. long, obovoid and nearly flat-topped, the calyptra nearly flat, scarcely apiculate, 5–6 mm. across, glabrous inside; hypanthium glabrous within, prolonged 2.5 mm. beyond the summit of the ovary; stamens about 200, 5 mm. long, densely fringing the orifice of the hypanthium in a zone 1.5 mm. wide; anthers 0.6–0.8 mm. long; style stout, about 8 mm. long, 0.4 mm. in diameter, enlarged (perhaps deformed) distally; ovary bilocular, the ovules in each locule 2, ascending.—Known only from the Trapecio amazónico, in Colombian territory very near to the Peruvian boundary, *Schultes & Black 8526*, type.

Peru (probably). Amazonian Colombia.

Calyptranthes multiflora Berg, in Mart. Fl. Bras. 14, pt. 1: 42. 1857. *?C. poeppigiana* Berg, l.c. 45.

A tree, pubescent in the inflorescence with numerous erect rufous hairs up to 0.2 mm. long, and usually with a few appressed, slightly longer and sometimes dibrachiate hairs near the base of the panicles; petioles and midveins of young leaves near the base sparingly pubescent; leaves elliptic or narrowly ovate, 2–4 (–6) cm. wide, 5–10 cm. long, (1.7–) 2.4–3 times as long as wide, about equally narrowed to the short-acuminate tip and the cuneate or subcuneate base, the margins decurrent on the short stout petiole 2–2.5 (–3.5) mm. long; midvein prominent beneath, not impressed above but plane or forming a low flat or convex ridge 0.5–1 mm. wide; lateral veins about 10 pairs, but often seeming to be 20 or more closely parallel veins on a side because of the many smaller intermediates; marginal vein about equaling the laterals, somewhat arched between them, usually less than 1 mm. from margin (up to 4 mm.); leaves dull in drying, nearly concolorous or the lower surface paler, both

sides with small inconspicuous glandular dots, the veins obscure above, evident beneath at least in mature leaves; inflorescence a pair of panicles, up to 8.5 cm. long and 2–3 cm. wide, from the basal nodes of a short axillary axis (or the axis elongating 3–4 mm. and producing a second and shorter pair of panicles from the next node); panicles 3 times compound, usually with about 5 irregular nodes, the lower branches up to 7- or 9-flowered; pedicels of the ultimate branchlets none, or up to 2 mm. long; flowers sessile above the bracteoles, but the base of the hypanthium often narrowed into a pedicel-like base; bracts and bracteoles linear, glabrous, deciduous before anthesis, the former 2–4 mm. long, the latter 1–1.5 mm.; buds 2–2.5 mm. long, glabrous, roughened by the prominent glands, apiculate, obovoid and usually attenuate at base; calyptra about one-third the length of the bud; petals 2 or more, spatulate, erose, 1 mm. long and nearly as wide; style 5 mm. long; stamens about 100, up to 6 mm. long; fruit not seen.—F.M. Neg. 23384.

Loreto: Timbuchi, *Williams 1087.* Manfinfa, *Williams 1089.* Amazonian Brazil, Venezuela and Colombia.

Calyptranthes poeppigiana Berg, the type of which came from Ega, Brazil (*Poeppig, s.n.*, in herb. Wien), is indistinguishable from *C. multiflora* except that the inflorescences are reduced to paired or glomerate spikelike branches 1.5–3 cm. long. Dr. Rechinger kindly made the type of *C. poeppigiana* available for my study, but I have not seen any other specimens resembling it, and I suppose that it represents an aberrant form of the relatively widespread *C. multiflora.* Univ. of Mich. Neg. 1018.

Calyptranthes paniculata R. & P. Fl. Peruv. Prodr. 74. *t. 13.* 1794. *C. fragrans* in herb. Ruiz, ex Berg, Linnaea 27: 20. 1855.

Tree to 30 meters high, completely glabrous or the vegetative buds strigose with reddish fusiform dibrachiate hairs up to 0.5 mm. long, and a few similar hairs persistent at the base and about the nodes of the inflorescence; leaves elliptic to lance-ovate or ovate, 2.5–4 (–6.5) cm. wide, 8–12.5 cm. long, (2–) 2.5–3.2 times as long as wide, bluntly short-acuminate, at base cuneate or sub-cuneate, or occasionally somewhat rounded, the margins decurrent on the petiole 1.5 mm. thick, 7 mm. long; midvein broadly sulcate above, prominent beneath; lateral veins very slender, about 12 (–15) pairs, obscure above, slightly elevated beneath; marginal vein about equaling the laterals and arched between them, 2–3 (–6) mm. from margin, with an outer, very fine, submarginal vein beyond it; leaves in dry-

ing pale green or brown above, somewhat lustrous and impressed-puncticulate, the lower surface greenish-brown, sparingly and minutely gland-dotted; inflorescence axillary, the axis tangentially flattened, 2.5–3 mm. long and wide, the 2 flowering branches from the lowest nodes, 8–10 cm. long, 3 to 4 times compound, many-flowered, divaricately and irregularly branched, the peduncle terete or nearly so, 1–1.5 mm. thick; branches alternate or opposite, the nodes often enlarged, the ultimate branchlets divaricate or somewhat reflexed, 2–10 mm. long, distally enlarged and bearing 1–3 sessile terminal flowers; bracts deciduous at anthesis, ciliate, 1–1.5 mm. long; buds 3–3.5 mm. long, obovoid or constricted about the middle, narrowed to the broad sessile base; calyptra about half as long as the persistent hypanthium, broadly infundibuliform, 1.3–1.5 mm. wide, with a conic apiculum 0.5 mm. long; hypanthium after dehiscence campanulate, 1.5–2 mm. across the orifice; fruit and flowers unknown.—F.M. Neg. 23387.

Huánuco: Pozuzo, *Ruiz* (type, in herb. Madrid?, not seen).—Río Acre: near mouth of Rio Macauhan, *Krukoff 5258, 5487*. Locality uncertain: *Ruiz* (isotype of *C. fragrans*, herb. Geneva ex herb. Berol. ex herb. Lambert); *Ruiz 24/45* (herb. Chicago ex herb. Madrid).

Calyptranthes plicata McVaugh, Fieldiana Bot. 29: 182. 1956.

A shrub 4.5 meters high, nearly glabrous except that the inflorescence is appressed-hirsutulous with rufous partly dibrachiate hairs up to 0.6 mm. long, the petioles and the midveins on the lower surface of the leaf puberulent; leaves large, sessile, obovate, 10–12 cm. wide, 30–38 cm. long, 2.5–3 times as long as wide, short-acuminate, narrowed to a width of 4–5 cm. near base and the margins there broadly decurrent and plicate on the enlarged petiolar base which is 5 mm. thick on the lower surface; midvein impressed or deeply sulcate above, prominent beneath; lateral veins 20–25 pairs, impressed above, prominent beneath; marginal vein about equaling the laterals and but slightly arched between them, 2–4 mm. from the margin; upper surface of blade dull and obscurely impressed-punctate; lower surface dull and probably paler, without apparent glands; inflorescence a divaricately branched, 3 times compound, bracteate panicle up to 7 cm. long, the panicle-branches very slender, up to 1.5 mm. in diameter, the nodes with conspicuous persistent divaricate boat-shaped attenuate bracts 2–3 mm. long (the lowest up to 1.5 mm. wide, 5 mm. long); flowers 50–100, mostly sessile in pairs along the spikelike secondary branches of the panicle, or in 3's at

the tips of the branches; immature buds obovoid, 3.5 mm. long, the calyptra pointed and somewhat apiculate, the hypanthium turbinate, glabrous within, prolonged at least 1 mm. beyond the summit of the ovary; stamens about 60; style not seen in buds examined; petals none.—A distinctive species, but unfortunately known only from the type specimen, which includes a single inflorescence with half-grown buds, and another, detached inflorescence with very much younger, undeveloped buds.

Peru (probably). Amazonian Brazil (Amazonas, Mun. São Paulo de Olivença, *Krukoff 8432*, type).

Calyptranthes pulchella DC. Prodr. 3: 257. 1828.

A tree to 8 meters high, glabrous except the vegetative buds and youngest branchlets strigose (usually very sparingly) with reddish hairs up to 0.5 mm. long; branchlets 2-winged, the wings up to 0.5 mm. high, arising just above the axil at one node and terminating between the leaf-bases at the node above, in an auricle-like prolongation 1–1.7 mm. long; leaves obovate or broadly elliptic, 1.5–3.3 cm. wide, 2.5–6 cm. long, 1.5–2 times as long as wide, the apex rounded, acute but blunt-tipped, or broadly and shortly acuminate, the base acute or cuneate, the margins decurrent on the stout channeled petiole 1 mm. thick, 2–3 mm. long; midvein sulcate and mostly impressed above, prominent beneath; lateral veins very slender and scarcely apparent, about 10–12 pairs with several intermediates; marginal vein like the laterals, 0.5–1 mm. from the margin; leaves dull in drying, pale green and indistinctly impressed-puncticulate above, pale brown and dotted with small dark glands beneath; inflorescence axillary, the axis either abortive and 1 mm. long, or elongate and leafy; flowering branches 2, 3–5.5 cm. long, opposite, arising from the lowest nodes of the axis, filiform or very slender, terete at base, gland-dotted, the peduncle distally enlarged and compressed, 2–2.5 cm. long, up to a little more than 1 mm. wide below the first node, often more slender; flowers few, mostly 3–11, sessile on the axis and at the tip or the lowest on lateral branches 3–6 mm. long; bracts and bracteoles not seen; buds 4–7 mm. long, 2–3 mm. thick, oblong or constricted above the middle, prominently gland-dotted and obconic above the broadly sessile base, obtusely pointed and rounded or obscurely apiculate, the calyptra urceolate, 2–3 mm. long; style glabrous, 6–8 mm. long (often with a subglobose small gall near the middle, the gall caused by a member of the Cynipidae); stamens about 125, up to 5–6 mm. long, the anthers 0.3 mm. long; fruit globose, 8 mm. in diameter, thickly glandular-verruculose.—The

Peruvian plant resembles the type of *C. pulchella* δ *parviflora* Berg, in Mart. Fl. Bras. 14, pt. 1: 516. 1859, namely Spruce's no. 2729 from near Panuré on the Río Vaupés. The type of *C. pulchella* var. *pulchella*, a collection made by Martius in the State of Minas Geraes, has the inflorescence and hypanthium sparsely red-strigose, but a comparison made at Munich in 1954 between this specimen and an isotype of δ *parviflora* indicates that these are conspecific. The Peruvian specimens have larger buds than the plants collected by Martius and Spruce; for notes on the varieties of this species see Mem. N. Y. Bot. Gard. 10: 76–77. 1958. F.M. Neg. 19897 (var. *pulchella*). Univ. of Mich. Neg. 1031 (var. *parviflora*).

Loreto: Mishuyacu, *Klug 1373*. Timbuchi, *Williams 959*. Southern Brazil; Amazonian lowlands, Brazil to Colombia.

Calyptranthes rufotomentosa McVaugh, Fieldiana Bot. 29: 183. 1956.

A shrub, the inflorescence densely tomentose with dark reddish-brown tangled hairs up to 1 mm. long; leaves glabrous, oblanceolate, 4–5 cm. wide, 15–21 cm. long, about 4 times as long as wide, narrowly acuminate with blunt-pointed acumen, the margins attenuate toward the base from above the middle, then abruptly narrowed and passing into the ventral surface of the nearly terete, stout, dark glabrous petiole 3 mm. thick, 7 mm. long; midvein elevated above in a flattened ridge or merely convex, elevated beneath its own thickness; lateral veins 10–15 pairs, rather distant and without conspicuous intermediates, convex but not prominent above, more evident beneath; marginal vein about equaling the laterals, nearly straight, prominent beneath, 3–4 mm. from margin; blades dark and lustrous above, and obscurely impressed-punctate, the lower surface dull and paler; inflorescence (not seen attached) about 6 cm. long, 3 times compound, about 50-flowered, the flowers clustered toward the tips of the branches, sessile; bracts scarious, glabrous or glabrescent dorsally, the larger ones linguaeform, 3 mm. wide, 8 mm. long, subpersistent; buds probably 3–4 mm. long before opening; hypanthium in open flowers urceolate, 4 mm. long, rounded at base, 3–3.5 mm. across the mouth, glabrous within, produced 1.5 mm. beyond the summit of the ovary; calyptra conic, apiculate, 1 mm. high, 1.5–2 mm. across; stamens about 75, 2 mm. long, the anthers 0.3 mm. long; style not seen; petals 3(?), narrow and slender-pointed, 0.6 mm. wide, 1.7 mm. long.

Peru (probably). Amazonian Brazil (Amazonas, São Paulo de Olivença, *Ducke 2240*, type).

Calyptranthes ruiziana Berg, Linnaea 27: 22. 1855.

Shrub or small tree to 5 meters high, the branchlets not or very narrowly winged, the branchlets, inflorescence and vegetative buds thinly covered with yellowish- or reddish-brown fusiform appressed dibrachiate hairs mostly about 0.3 mm. long (up to 0.6 mm. long or more, on leaf-bases); lower leaf-surfaces with few dark hairs and usually with rather numerous persistent pale appressed hairs; leaves elliptic, 2.5–4 cm. wide, 5.5–10 cm. long, 2–3 times as long as wide, acuminate, the base acute, the margins cuneately decurrent on the stout petiole 1–1.3 mm. thick, 6–7 mm. long; midvein sulcate above, prominent beneath; lateral veins 12–15 pairs or apparently more because of the numerous parallel intermediate veins, obscure above, somewhat elevated but not very prominent beneath; marginal vein about equaling the laterals and little arched between them, 0.7–2 mm. from the margin; blades smooth and somewhat lustrous, green or drying brown above, impressed-puncticulate but this often obscure in mature leaves; lower surface yellow-green or whitish, obscurely or apparently not at all dotted; inflorescence axillary, the axis tangentially flattened, glabrous, 2 mm. wide, very short or up to 10 mm. long; flowering branches 2, from the lowest nodes, 3 times compound, many-flowered, (4–) 6–10 cm. long, the panicle 4–5 cm. wide at base, the branches opposite or alternate, the flowers sessile, aggregated toward the tips of the branches and mostly in 3- to 10-flowered clusters, these short-pedunculate except the terminal; bracts deciduous before anthesis; buds 2–2.5 mm. long, obovate, shortly apiculate or nearly rounded at tip, the base obconic, strigose; hypanthium after dehiscence campanulate, 1.5–1.7 mm. long, the orifice 1.3–1.7 mm. wide in flower and fruit; calyptra concave, 1.3–1.7 mm. wide; style 4–4.5 mm. long; stamens about 60, up to 5 mm. long, the anthers about 0.3 mm. long; fruit globose or oblate, 4–6 mm. in diameter, thickly gland-dotted, the hypanthium prolonged into a short neck more than 1 mm. wide and nearly 1 mm. long.

Loreto: Along Río Itaya, *Williams 175*. Along Río Mazán near Iquitos, *Williams 8148*.—Without locality: *Ruiz* (type, in herb. Berlin, not seen); *Ruiz 5105* (probable isotype, herb. US ex herb. Berlin ex herb. Lambert).

Tentatively referred to this species, but with slightly larger, nearly eglandular fruit, and narrower leaves, is Killip & Smith's no. 29199, from San Lorenzo, Loreto, between mouths of Río Pastaza and Río Huallaga. A plant which will be found here in the key, but perhaps represents another species, is Killip & Smith's no. 28293

(herb. NY), from between Yurimaguas and Balsapuerto, on the lower Río Huallaga. The leaves are up to 11 cm. wide and more than 20 cm. long, with markedly impressed veins (including the marginal and the 15 or more pairs of laterals). The lower panicle branches are 5 cm. long. The calyptra is conic, apiculate, 1 mm. long; fruit 6–7 mm. in diameter, with style 4.5 mm. long.

Calyptranthes sessilis McVaugh, Fieldiana Bot. 29: 183. 1956.

A small shrub, glabrous except a few minute flat brownish hairs at the base of the hypanthium; leaves ovate, cordate, sessile (the broad compressed petiolar base up to 3 mm. long and wide), 4–7 cm. wide, 9–12 cm. long, 1.8–2.5 times as long as wide; blades acuminate, the acumen rounded at very tip; midvein prominent beneath, impressed above; lateral veins about 15 pairs, impressed above; marginal vein impressed above, about equaling the laterals and arched between them, 3–6 mm. from the margin, and with a smaller vein parallel to it and between it and the margin; leaves dull in drying, the upper surface obscurely glandular at maturity, the lower more plainly gland-dotted; inflorescence axillary or falsely terminal, consisting of paired narrow panicles 6 cm. long, these opposite and arising from the two sides of a primordium in the axil of each of the terminal leaves; panicles sometimes bracteate at base, the bracts lanceolate, keeled, 3 mm. wide, 6 mm. long; peduncle 2–3 cm. long, somewhat compressed and 1.7 mm. wide below the first node; nodes about 5, somewhat irregular, the lower ones bearing paired pedicellate clusters of 3 flowers each, or all nodes with the pedicels 1-flowered and opposite or subopposite; bracteoles and bracts (except the basal) not seen; flowers sessile, or on stout pedicels up to 2 mm. long, 0.5 mm. thick; buds fusiform, 6–7 mm. long and 2 mm. thick, tapering about equally to the slender hypanthium and the cylindrical apex, or somewhat abruptly contracted into the beak; operculum 4–4.5 mm. long; petals none; style 8.5 mm. long; stamens 60–75, about 8 mm. long; anthers broadly elliptic, about 1 mm. long; fruit globose, 7 mm. thick; seed 6 mm. long, the radicle about half as long, compressed to one side of the cotyledons.—*Calyptranthes spruceana* Berg, in Mart. Fl. Bras. 14, pt. 1: 45. 1857, based on *Spruce 1551* from the lower Rio Negro, is very similar. In that species, however, the buds are said to be globose and 5 mm. in diameter, the leaves are obtusely rounded at the tips, the veins are not impressed on the upper surface, and the fruits are more clustered near the tips of the inflorescence. Univ. of Mich. Neg. 446.

Loreto: Yurimaguas, *Williams 4583* (F, type); *Killip & Smith 27603*.

Calyptranthes simulata McVaugh, Fieldiana Bot. 29: 184. 1956.

Shrub or tree to 9 meters high, the inflorescence [and probably the vegetative buds and young leaves and branchlets] with a thin covering of flat fusiform yellowish-brown appressed hairs mostly about 0.2–0.3 mm. long, a few similar hairs persisting on the lower leaf-surface; leaves ovate or lanceolate, 3.5–6 cm. wide and 9–15 cm. long, or on vigorous branches 7–8 cm. wide, 18–25 cm. long, all 2.5–3 (–3.6) times as long as wide, somewhat narrowed toward the apex from the middle or below and prominently triangular-acuminate, gradually rounded to the subcuneate base, the margins decurrent on the stout dark petiole 1.5–2.5 mm. thick, 7–12 mm. long; midvein broadly sulcate above, prominent beneath; lateral veins 20–25 or more pairs in addition to several intermediate ones, all slender, slightly raised on both surfaces, prominulous beneath; marginal vein similar to the laterals and arched between them, 2–3 (–5) mm. from margin, a very fine submarginal vein visible beyond it; blades drying green, the upper surface smooth and impressed-puncticulate, the lower yellow-green, dull, finely dark-dotted; inflorescence axillary, the short axis much flattened tangentially, up to 3 mm. wide and about 4 mm. long, the paired flowering branches from the lowest node, 6–11 cm. long, the peduncle 1.5–2 (–4) cm. long, somewhat angled or compressed, 1.5–2 mm. wide below the first node; panicle narrow, or broader and loosely many-flowered, 3 to 4 times compound, the lower branches up to 3–5 cm. long; flowers numerous, sessile, mostly in 3's on short peduncles along the branches and near the tips; branches opposite or mostly alternate; bracts deciduous before anthesis; buds 2–2.5 mm. long, obovoid, turbinate and more or less rufous-strigose near base, and often arachnoid-whitened as well, the apex rounded or shortly apiculate; hypanthium after dehiscence broadly campanulate, 1.3–1.5 mm. long, the orifice about 1.5 mm. wide; calyptra explanate, 1.3–2 mm. wide; style 5–6 mm. long or a little less; stamens 40–50, 4–6 mm. long, the anthers 0.3 mm. long.—This species is known only from specimens in which the flowering branches are borne in the terminal axils of the twigs, on old wood or what appears to have been a vigorous shoot of the preceding season. The normal size and shape of the leaves on average twigs cannot be determined with certainty, nor can the winged or non-winged condition of the young branchlets be ascertained. It is

possible that this plant is conspecific with *Calyptranthes tessmannii*, which it resembles in many respects. From the specimens at hand, however, the two are abundantly separable by many characters.

Loreto: Iquitos, Aug. 2–8, 1929, *Killip & Smith 26916, 27352.* Iquitos, *Tessmann 5372* (G); Peru-Colombia boundary, forest near Río Putumayo, Sept. 26–Oct. 10, 1930, *G. Klug 1614* (MICH, type).

A collection from Tarapoto, San Martín, *Williams 6539*, is probably the same species; it bears immature globose or oblate fruit about 1 cm. in diameter; the pubescence is exactly that of *C. simulata* and the leaves are very like those of that species except that the lateral veins are hardly more than 15 pairs; the fertile axis is continuous and leafy and the flowering branch is lateral from its base.

Calyptranthes speciosa Sagot, Ann. Sci. Nat. ser. 6, 20: 187. 1885, var. **gigantifolia** (McVaugh) McVaugh, Mem. N. Y. Bot. Gard. 10: 79. 1958. *C. gigantifolia* McVaugh, Fieldiana Bot. 29: 181. 1956.

Tree up to 20 meters high, the inflorescence densely appressed pubescent with coarse rufous mostly dibrachiate hairs up to 0.5 mm. long, the leaves glabrous or pubescent beneath especially when young with a few pale flaccid hairs or with a few dibrachiate hairs intermixed; leaves elliptic or oblong, 6–15 cm. wide, 14–38 cm. long, 2.5–4 times as long as wide, rather abruptly narrowed at both ends, the tip narrowly acuminate, the base rounded and the margins decurrent on the stout petiole 8–12 mm. long, 1.5–3.5 mm. thick; midvein and usually the marginal vein impressed above, all veins prominent beneath; lateral veins 20–30 pairs; marginal vein continuous, about equaling the laterals and somewhat arched between them, 2–4 mm. from the nearly plane margin, usually with a smaller outer vein beyond it; leaves often browning in drying, the upper surface smooth, sparingly and often obscurely impressed-puncticulate, the lower surface gland-dotted; inflorescence axillary and usually 4 times compound, often appearing supra-axillary when the central axis elongates and becomes leafy, or terminal when no more than one axillary bud develops at a terminal node; basal and longest branches of the panicle 3 times compound, 6–10 cm. long with up to 100 flowers, divaricately branched, the branches compressed and up to 2 mm. wide below the nodes; buds 3–5 mm. long, sessile, obovate, rounded or obscurely apiculate at tips, clustered near the tips of the branchlets; calyptra about half as high as the persistent hypanthium; bracts and bracteoles mostly deciduous before anthesis, lanceolate to ovate, 1–2.5 mm. long or the lowest bracts persistent, foliaceous, ovate,

1.5 cm. long, 6–8 mm. wide; style apparently defective in all flowers seen, 1–1.5 mm. long; stamens 150–175, about 5 mm. long, cream-color or golden-yellow (Klug), the anthers about 0.5 mm. long; fruit globose, not seen mature, but by analogy with related species probably 8–10 mm. in diameter.—Colombian specimens collected by Mutis (nos. 1940, 2234, 2951, 3961, and 5754) appear to belong to this variety also. Also closely related is *Calyptranthes macrophylla* Berg, based on *Poeppig 2739*, from Ega, Brazil. This latter species, however, differs markedly in leaf-characters: its leaves are more coriaceous, acute rather than acuminate, less prominently veined; the marginal vein is close to the margin and not impressed above; the lower surface is densely pubescent with minute appressed pale hairs and with numerous dibrachiate hairs intermixed. In this last respect *C. macrophylla* agrees precisely with *C. speciosa* var. *speciosa* of the Guianas. *C. gigantifolia* is scarcely distinguishable from typical *C. speciosa* and surely does not merit recognition as a distinct species. Its leaves are glabrous or nearly so beneath (densely and finely pubescent, as noted above, in *C. speciosa*); the midvein is impressed on the upper surface (in *C. speciosa* sometimes impressed but more often plane or convex); the marginal vein lies 2–4 mm. from the margin (as against usually less than 1 mm. in *C. speciosa*); the flowers in *C. gigantifolia* appear to be somewhat larger than those of *C. speciosa* and with more numerous stamens (150–175 as against 80), but seem otherwise indistinguishable. The inflorescence in the two plants, with its somewhat unusual supernumerary branches, appears to be identical. Univ. of Mich. Neg. 486.

San Martín: Juanjuí, *Klug 4277* (US, type).—Loreto: Florida, *Klug 2332, 2347*. Bolivia, Amazonian Colombia.

Calyptranthes tessmannii Burret, in herb., ex McVaugh, Fieldiana Bot. 29: 184. 1956.

A shrub or tree, the branchlets and vegetative buds, inflorescence and petioles loosely appressed pubescent with yellow-brown fusiform dibrachiate hairs up to 0.5 mm. long, a few hairs persisting on the lower surface of the leaves, especially on the midveins; branchlets narrowly wing-angled, the wings arising above the axil at one node and terminating between the leaf-bases at the node above, the terminal auricle wider than the wing, up to 0.5 mm. wide, 1.7–2.5 mm. long; leaves elliptic, 3–4.5 cm. wide, 8–11.5 cm. long, about 2.5 times as long as wide, nearly equally rounded to both ends, the tip abruptly and caudately acuminate, the acumen 3 mm. wide at base, 1.3–2.5 cm. long; base of blade acute or slightly rounded, the mar-

gins cuneately decurrent on the stout petiole 1–1.5 mm. thick, 8–10 mm. long; midvein impressed above, prominent beneath; lateral veins about 15 pairs, slightly elevated on both surfaces, prominulous beneath; marginal vein about equaling the laterals and arched between them, prominulous beneath, 1–2.5 mm. from margin, with a faint submarginal vein sometimes discernible beyond it; blades dark or dull green above, smooth and impressed-punctate, the lower surface paler, yellowish-green, dotted with small glands; fertile branches leafy, axillary, the primary axis 5 mm. long or less, tangentially much flattened, 3 mm. wide below the first node, from which arise the 2 opposite narrow panicles 5–10 cm. long and up to 2.5 cm. wide at base; peduncle 2–3.5 cm. long, somewhat compressed, 1.5–2.5 mm. wide below the first node; lower branches about 1.5 cm. long, 10-flowered, the branches from the upper nodes shorter, often alternate, the flowers sessile, fewer, in short-pedunculate clusters; bracts narrowly elliptic or oblanceolate, 3 mm. long, partly persistent until anthesis; buds 3–3.5 mm. long, fusiform, appressed brown-hairy, the narrow apiculate tip 1 mm. long (up to 2 mm. on the calyptra after dehiscence); calyptra about 2 mm. wide, the hypanthium after dehiscence broadly infundibuliform or campanulate, less than 2 mm. long; style 6 mm. long; stamens about 50, as long as the style, attached about at the line of dehiscence and falling almost with the calyptra; anthers about 0.3 mm. long.—F.M. Neg. 23395.

Loreto: Stromgebiet des Marañón von Iquitos aufwärts bis zur Santiago-Mündung am Pongo de Manseriche, ca. 77° 30′ west, *G. Tessmann 4832* in 1924 (G, type).

Calyptranthes tridymantha Diels, Verh. Bot. Ver. Brandenb. 48: 188. 1907.

Shrub 3–9 meters high, loosely tomentose on the young branchlets and vegetative buds and inflorescence, with golden-yellow dibrachiate hairs up to more than 1 mm. long, the basal stalk of the hair erect and often as long as the spreading or ascending branches; mature leaves often with a few hairs persisting beneath; branchlets narrowly 2-winged, the wing up to 0.5 mm. wide, arising above the axil at one node and terminating between the leaf-bases at the node above, in an auricle-like prolongation 2 mm. long; leaves elliptic, ovate, or occasionally obovate, 2–3.5 cm. wide, 3–5.5 cm. long, 1.8–2.4 times as long as wide, the apex rounded to obscurely and bluntly acuminate, the base rounded, or somewhat narrowed from below the middle and abruptly contracted to the very base, the margins

shortly decurrent on the petiole 1–1.5 mm. thick, 2–2.5 mm. long; midvein impressed above, prominent beneath; lateral veins 10–12 pairs, slightly elevated and visible on both sides, but very slender and with numerous intermediate veins nearly the same size; marginal vein distinctly double, the inner about equaling the laterals and slightly arched between them, 1–1.5 mm. from margin; leaves dull green and obscurely or not at all impressed-puncticulate above, pale brown beneath, the glands not or scarcely apparent; inflorescence axillary, the axis abortive, the flowering branches 2, 3–5 cm. long, each few- (about 9-) flowered, opposite from the lowest nodes, tomentose and very minutely gland-dotted, the peduncle 2–2.5 cm. long, slightly compressed distally and about 1 mm. wide near summit; lateral secondary branches usually a single pair, 6–20 mm. long; flowers sessile, in terminal triads; bracts deciduous before anthesis, subfoliaceous, less than 1 cm. long; bracteoles not seen; buds probably about 5 mm. long, shortly apiculate; calyptriform calyx [i.e., the calyptra?] 2–2.5 mm. across (Diels); style longer than the stamens; stamens 6 mm. long, white (Diels); petals none.—A distinctive species by virtue of the golden-yellow tomentum of erect, stalked and branched hairs. F.M. Neg. 23396.

Río Acre: Near mouth of Rio Macauhan, *Krukoff 5549*. Amazonian Brazil.

3. MYRCIA DC.

Reference: Berg, Linnaea 27: 35–80, 82–129. 1855–1856; and in Mart. Fl. Bras. 14, pt. 1: 59–143, 150–210. 1857.

Calyx-lobes 5 (rarely 4), distinct and imbricated in bud and in flower, and usually persistent on the fruit; hypanthium variously or not at all prolonged beyond the summit of the ovary. Petals usually 5, often half as long as the stamens or longer, and conspicuous. Inflorescence-axis usually prolonged, with several pairs of lateral branches.

A large genus of tropical America; *Myrcia* DC. and *Aulomyrcia* Berg, according to Berg, together comprised more than 400 species. The supposed distinction between these two groups lies in the hypanthium, which in *Myrcia* is described as "scarcely produced beyond the ovary, and constricted beneath the calyx," and in *Aulomyrcia* is described as "strongly produced beyond the ovary, but not constricted beneath the calyx." Although numerous species can be assigned to one genus or the other on the basis of this character, it seems quite impossible to apply the character generally because

various other species occupy positions intermediate between the extremes, and the placement of a given species in *Myrcia* rather than *Aulomyrcia*, or the reverse, can hardly be made objectively. I have therefore followed Bentham, in Benth. & Hook. f. Gen. Pl. 1: 716. 1865; Kiaerskou, Enum. Myrt. Bras. 63. 1893; and Urban, Bot. Jahrb. 19: 577–582. 1895, in relegating *Aulomyrcia* to synonymy.

Leaves sessile, cordate.

Leaves ovate, 13–17 cm. wide, 1.7–2 times as long as wide, the veins impressed above; inflorescence decompound, stout, 20 cm. long or more; buds 7 mm. long or more; northeastern Peru (Loreto) ..... *M. obumbrans*

Leaves lanceolate, 3.5–5 cm. wide, 2.5–4 times as long as wide, the lateral veins not impressed above; inflorescence few-flowered, 4–7 cm. long; buds 4–6 mm. long; northern Bolivia (La Paz) ..... *M. connata*

Leaves definitely petiolate, cuneate or rounded at base or occasionally subcordate.

Inflorescence at anthesis (and usually in fruit) conspicuously bracteate, the bracts ovate, pointed, 6–12 mm. long; calyx-lobes 2.5–6 mm. long, lanceolate or ovate, much longer than wide; branchlets long-hirsute.

Hairs of branchlets reddish-brown, up to 3.5 mm. long; calyx-lobes 4, the larger ones 6 mm. long ..... *M. huallagae*

Hairs of branchlets yellowish-brown, up to 2 mm. long; calyx-lobes 5, rarely 4, the larger ones 2.5–4 mm. long. *M. bracteata*

Inflorescence with small inconspicuous bracts which are deciduous before the flowers open or occasionally at least in part persistent; calyx-lobes 3 mm. long or usually less, rounded to sub-truncate or triangular, mostly as wide as, or wider than, long; branchlets various.

Leaves 2.5–7 cm. long, narrowly elliptic or oblanceolate, mostly 5–6 times as long as wide, blunt-tipped ..... *M. salicifolia*

Leaves broader, usually larger and not more than 3 times as long as wide, if narrow and elongate the tips acuminate or narrowly acute.

Summit of the ovary, and interior of the prolonged and cup-like hypanthium, glabrous; fruit usually globose, 5–6 mm. in diameter.

Outer surface of the hypanthium glabrous, the branches of the inflorescence glabrous or sparingly pubescent.

Leaves small, less than 3 cm. long, elliptic to obovate, rounded to blunt-pointed at tip, mostly cuneate at base; inflorescence 3–4 cm. long, often exceeding the leaves; flowers mostly 11 or fewer. . . *M. myrtillifolia*

Leaves mostly 4–10 cm. long, elliptic or ovate, rarely obovate; inflorescence larger, if as little as 5 cm. long then equaling or shorter than the leaves; flowers usually more numerous.

Pubescence of inflorescence and young vegetative growth rufous; plant often drying reddish-brown or nearly black; glandular dots inconspicuous or scarcely apparent on the upper leaf-surface, or impressed-punctate.

Buds 2.5–3.5 mm. long; inflorescence glabrous or nearly so, only the bracts and leaf-buds pubescent; plants green to reddish-brown in drying. *M. yungasensis*

Buds 1.7–2.5 mm. long; inflorescence thinly appressed-pubescent except the hypanthium; plants often blackening in drying. *M. amazonica*

Pubescence silvery-white or yellowish-white, the plant drying bright green; glandular dots abundant and conspicuous on both leaf-surfaces (inconspicuous in some Peruvian specimens); inflorescence glabrous or nearly so; buds 2 mm. long or less. *M. multiflora*

Outer surface of the hypanthium and branches of the inflorescence pubescent.

Hairs of the hypanthium flexuous, rufous or white-tipped; calyx-lobes membranous, bluntly triangular, less than 1 mm. long and wide, separate and imbricate, with evident sinuses between them. . *M. mathewsiana*

Hairs of the hypanthium somewhat stiff and appressed, yellowish or pale reddish; calyx as a whole truncate, the individual lobes thickened and glandular-verruculose, about 1.5 mm. wide and 0.5 mm. high, together appearing as a 5-notched ring at the summit of the hypanthium. . . . . *M. aliena*

Summit of the ovary and usually the interior of the hypanthium hairy; hypanthium variously or not at all prolonged beyond the ovary, the center of the flower thus flat or variously depressed; fruit various.

Outer surface of the hypanthium glabrous, the entire plant glabrous or nearly so; fruiting hypanthium prolonged into a neck 2 mm. long at the apex of the fruit.

M. subglabra

Outer surface of the hypanthium hairy, usually strongly so; fruiting hypanthium, as far as known, not prolonged into a neck.

Inflorescence slender, the axis often terete or, if compressed, mostly less than 1.5 mm. wide (measured just below the lowest branches); small-flowered species, the disk 1–2 (rarely to 2.5) mm. wide; fruit ellipsoid or oblong, 5–9 mm. long.

Inflorescence 7- to 10- (rarely 20-) flowered, once-compound, the slender terete axis 1 mm. thick, 3–10 cm. long; plant hirsute with spreading brownish-yellow hairs up to 1.5 mm. long.

M. poeppigiana

Inflorescence many-flowered, 3 to 4 times compound; axis terete or somewhat compressed, if hirsute the hairs ascending or appressed, 1 mm. long or less.

Leaves impressed-punctate above even at maturity; lateral veins scarcely or not at all apparent above; inflorescence with minute mostly erect hairs 0.1 mm. long and usually with some longer hairs as well.

Leaves mostly lanceolate, rounded at base, abundantly and conspicuously punctate; petiole 3 mm. long or less. . . . . *M. sylvatica*

Leaves elliptic to lanceolate or ovate, mostly cuneate at base, punctate but at maturity often inconspicuously so; petiole 4–6 mm. long.

M. paivae

Leaves not impressed-punctate above; lateral veins apparent above; inflorescence sometimes nearly glabrous, usually uniformly strigose to hirsute

with appressed or ascending hairs up to 0.5–1 mm. long.

Petioles 5–7 mm. long; leaves cuneate or somewhat rounded at base; [slender or depauperate forms of]..... *M. fallax*

Petioles 1–3 (–4) mm. long; leaves appearing subsessile, rounded and often cordate-auriculate at base..... *M. splendens*

Inflorescence relatively stout, the axis and branches compressed or strongly flattened; axis at least 1.5 mm. wide (often 2.5–4 mm. wide) (measured just below the lowest branches); flowers small or large; fruit various.

Calyx in bud and in fruit truncate as seen from the side, much shorter than the globe of the petals before anthesis; calyx-lobes one-half to one-third as long as wide, with truncated or slightly rounded distal margins, forming a nearly straight band encircling the summit of the hairy hemispheric or broadly cup-shaped hypanthium; center of flower depressed, the hypanthium prolonged up to 2 mm. beyond the summit of the ovary, the cavity hairy or in *M. aliena* nearly glabrous.

Buds 2–2.5 mm. long or less; disk 2–2.5 mm. wide; calyx-lobes 0.3–0.5 mm. high, usually fleshy and often glandular-verruculose on the back.

Inflorescence pale-strigose, the plants nearly glabrous at maturity; lateral veins not impressed above, smooth and inconspicuous beneath; petals glabrous or essentially so.... *M. aliena*

Inflorescence, and the whole plant, more or less velutinous with brownish red hairs; lateral veins impressed above, conspicuous and hairy beneath; petals glabrous or strigose without. *M. directa*

Buds 4–5 mm. long; disk 4 mm. wide; petals appressed-silky without; calyx-lobes thin-edged (sometimes sparingly roughened on the back), 1.3–1.5 mm. high..... *M. neesiana*

Calyx-margin not truncate, the lobes together not forming a recognizable unit but individually spreading,

with evident sinuses between them; lobes broadly rounded or triangular, as long as wide or only two-thirds as long as wide; center of the flower variously depressed or quite flat.

Inner surface of the calyx-lobes glabrous or with a few scattered hairs, often with large glandular dots; small-flowered species, the disk 1.3–2 (rarely –2.5) mm. wide; style (as far as known) 5 mm. long or less.

Upper leaf-surface with 5–8 large convex glandular dots per square mm.; principal veins, including the midvein and the marginal vein, impressed; inflorescence sparingly pubescent, markedly glandular; stamens 250–300.

M. pertusa

Upper leaf-surface without apparent glands, or with minute impressed glands; veins not impressed, or sometimes the laterals or the midvein somewhat so; inflorescence glabrous to hirsute; stamens 200 or fewer.

Upper surface of the leaves thickly but minutely impressed-puncticulate; lateral veins (15–) 20–25 pairs; inflorescence hirsutulous, often branching from the base and then appearing fasciculate, the main axis often 1 cm. long or less, flattened. . . . . *M. fascicularis*

Leaves not impressed-puncticulate, usually without apparent glands at maturity; lateral veins 10–15 pairs; inflorescence variously pubescent or nearly glabrous, the main axis usually much longer than 1 cm., and without basal branches.

Lateral veins impressed, 10–12 pairs, much stronger than the intermediate ones; midvein hairy, flat or somewhat convex above; inflorescence hirsute with yellowish hairs up to 1 mm. long; hypanthium elongate in bud, with about 10 narrow longitudinal ridges contrasting in color to the densely yellow-hairy intervals.

M. ambivalens

Lateral veins not impressed, often slightly elevated in drying, about 12–15 pairs, often little stronger than the intermediate ones; midvein glabrous or pubescent, sulcate or slightly impressed; inflorescence sparingly short-pubescent (rarely hirsutulous); hypanthium narrowly conic in bud, not ridged.

Petioles 5–7 mm. long; leaves cuneate or somewhat rounded at base. . *M. fallax*

Petioles 4–5 mm. long; leaves rounded and often cordate-auriculate at base; [vigorous forms of]..... *M. splendens*

Inner surface of the calyx-lobes appressed-pubescent; small- or large-flowered species; style various.

Lower leaf-surface finely bullate, the raised areas occupying the small intervals between the reticulate veinlets, and coalescing so as to obscure the surface of the veinlets; pubescence of inflorescence soft, ochraceous or rusty.

M. deflexa

Lower leaf-surface smooth or verruculose, not bullate; pubescence various.

Branches of the inflorescence, and the hypanthium, abundantly tomentose or hirsutulous with reddish hairs; [see also *M. platycaula* (p. 641), in which the hypanthium is covered with rufous-tawny straight hairs, and *M. directa*, in which the calyx-lobes are only 0.3–0.5 mm. long].

Inflorescence rufous-tomentose; leaves 10–15 cm. long, broadly and bluntly acuminate, or obtusely pointed, lustrous and nearly glabrous beneath, with prominent large glands..... *M. atrorufa*

Inflorescence pale rufous-hirsutulous with hairs of different lengths intermixed; leaves 12–26 cm. long, abruptly acuminate, dull and pale beneath, eglandular but with numerous appressed hairs.

M. egensis

Branches of the inflorescence, and the hypanthium, with white or yellow, appressed or spreading, mostly straight hairs; hairs sometimes confined to the hypanthium, and then occasionally reddish or tawny.

Lateral veins, and often the marginal vein also, impressed on the upper leaf-surface; [see also *M. madida*, a large-leaved species in which the lateral veins may dry as fine lines slightly below the surface level].

Leaves hirsute beneath, at least on the veins, with soft yellow hairs up to 1 mm. long; inflorescence similarly hirsute with spreading or ascending hairs; lateral veins about 10 (rarely –15) pairs; disk 3–3.5 mm. wide. *M. mollis*

Leaves sparingly appressed-pubescent beneath, or with a few long hairs on the veins; inflorescence sparingly hispidulous to appressed-pubescent with short hairs; lateral veins mostly more than 15 pairs.

Leaves rounded, obtuse, or emarginate at apex, middle-sized (mostly less than 15 cm. long), relatively broad (mostly not more than twice as long as wide).

Calyx-lobes about 1 mm. long; leaves rounded or emarginate at apex, 1.3–1.5 times as long as wide; inflorescence and branchlets sparingly hairy. . . . . *M. fasciata*

Calyx-lobes 2–2.5 mm. long; leaves rounded to obtuse or obscurely apiculate, about twice as long as wide; inflorescence and branchlets velutinous. . . . . *M. dispar*

Leaves markedly acuminate or acute, mostly larger (16–27 cm. long ex-

cept in one species), relatively narrow (mostly 2–4 times as long as wide).

Leaves middle-sized, less than 15 cm. long, nearly sessile, the petioles 1.5–2 mm. long; blades bullate above in drying, the 15–20 pairs of ladder-like veins alternating with elongate raised and convex surface areas; marginal vein inconspicuous beneath, the lateral veins prominent near the midvein only; small-flowered species, the disk 1.5–2 mm. wide. *M. fenestrata*

Leaves larger, 16–27 cm. long, the petioles 3–8 mm. long; blades flat in drying; lateral and marginal veins all very prominent beneath; large-flowered species, the disk 3–4 mm. wide.

Leaves appressed-pubescent beneath; midvein sulcate above; flowers aggregated on very short angular branchlets; hypanthium strongly angled in drying, whitened by thick felted hairs. *M. pentagona*

Leaves nearly glabrous and markedly verruculose beneath; midvein forming a narrow ridge above; inflorescence loosely branched, the flowers mostly in 3's on slender branchlets; hypanthium conic, strigose. *M. crassimarginata*

Lateral and marginal veins not impressed on the upper surface, usually slightly raised in drying.

Leaves hirsute beneath, at least on the veins, with soft yellow hairs up to 1 mm. long; inflorescence similarly hir-

sute with spreading or ascending hairs; disk (2.5–) 3–3.5 mm. wide; lateral veins about 10 (rarely –15) pairs.
M. mollis

Leaves appressed-pubescent or nearly glabrous beneath; inflorescence appressed-pubescent or short-hirsutulous (the hairs less than 0.5 mm. long); disk and lateral veins various.

Flowers aggregated near the tips of the panicle-branches, those of the terminal clusters sessile or on very short stout pedicels up to 1 mm. long and nearly as thick; disk 3 mm. wide or less.

Hypanthium whitened with very short pale felted hairs; disk 2.5–3 mm. wide; leaves 18–23 cm. long; buds 4–4.5 mm. long.....*M. madida*

Hypanthium covered thinly by appressed short silky hairs; disk 2–2.5 mm. wide; leaves 7–14 cm. long; buds 3 mm. long.
M. concava

Lateral flowers of the terminal clusters on slender pedicels 2–6 mm. long; disk 3–4 mm. wide; leaves 16 cm. long or less, with 10–15 pairs of lateral veins.

Branches of the inflorescence short-hirsutulous; marginal vein about as strong as the laterals, strongly arched between them.
M. albobrunnea

Branches of the inflorescence appressed-strigose or nearly glabrous; lateral veins diminishing distally and usually not forming a distinct marginal vein.
M. dichasialis

Myrcia albobrunnea McVaugh, Fieldiana Bot. 29: 187. 1956.

Tree 3–8 meters high, the inflorescence, branchlets, and petioles short-hirsutulous with stiff, erect, pale yellowish hairs 0.3 mm. long (these appressed, and up to 0.5 mm. long on vegetative buds, hypanthium, and lower surfaces of leaves); leaves ovate, 4–7 cm. wide, 9–16 cm. long, 2–2.5 times as long as wide, short-acuminate, the base rounded, the margins prolonged, raised above the surface, inclosing a space where decurrent on the stout petiole 1.5–2.5 mm. thick, 4–6 mm. long; midvein sulcate and hairy above near base, plane or convex near tip, prominent beneath; lateral veins 10–15, with some intermediate veins nearly equaling them, rather obscure above, prominulous beneath; marginal vein about equaling the laterals and arched between them, 1.5–3 mm. from margin (or in the largest leaves 3–6 mm. from margin and more strongly arched); blades darkening in drying, smooth and lustrous above, dull and yellowish-green and rather prominently appressed-pubescent beneath; glands not apparent; inflorescence an axillary or falsely terminal panicle 6–10 cm. long, rather regularly twice (or partly 3 times) compound, the axis and main branches flattened, 1.5–2.5 mm. wide below the first node; branches mostly opposite and divaricate, the flowers in 3's or sometimes solitary on short lateral branches, the lateral pair of the triads usually on pedicels 2–3.5 mm. long and markedly more slender than the branches from which they arise; bracts and bracteoles apparently deciduous before anthesis; buds 3.5–4 mm. long, obovate, the hypanthium obconic, densely hairy, about as long as the calyx; calyx-lobes 5, broadly rounded, pubescent without and densely appressed-pubescent within, 2.5 mm. wide, 1.5–2 mm. long; disk about 4 mm. wide, hirsute, deeply sunken (1 mm.) in center; style 7.5–8 mm. long, hairy near base or half its length; stamens about as long as the style or longer, more than 200, the anthers 0.3 mm. long; petals white, obovate, about 5 mm. long, hairy outside; flowers white and brown (Klug).—This species strongly resembles *M. dichasialis*, a native also of the vicinity of Iquitos. The present species differs from *M. dichasialis* in having the branchlets markedly hirsutulous rather than glabrous or sparingly appressed-strigose. The flowers in *M. albobrunnea* are slightly larger than in *M. dichasialis*, the leaves are less markedly reticulate on the upper surface, the midvein is hairy above, and the marginal vein is distinct although strongly arched; the lateral flowers of the terminal triads are more conspicuously pedicellate in *M. dichasialis* than in *M. albobrunnea*. Univ. of Mich. Neg. 458.

Loreto: Iquitos, 100 meters, woods, *Killip & Smith 27006*, Aug. 3–11, 1929. Mishuyacu, 100 meters, forest, *G. Klug 1030*, Feb.–Mar., 1930 (US, type).

Myrcia aliena McVaugh, nom. nov. *Aulomyrcia chilensis* Berg, Linnaea 27: 38. 1855, not *Myrcia chilensis* Berg, 1855.

A tree 4–8 meters high, nearly glabrous at maturity; the young growth, inflorescence, leaf-buds and base of hypanthium strigose with lustrous yellowish or pale reddish hairs up to 0.4 mm. long; leaves elliptic, or widest above the middle, 2–5 cm. wide, 5–12 cm. long (on shoots 6 by 15 cm.), mostly 2.3–3 times as long as wide; blades narrowed about equally to a conspicuous often curved acumen 1–2 cm. long and to the base, where merging into a petiole 6–10 mm. long, 1 mm. thick; midvein impressed above, prominent beneath; lateral veins 12–20 pairs; marginal vein about equaling the laterals, arcuate between them, and 1–2 mm. from margin; glandular dots inconspicuous at maturity of leaves; inflorescence (4–) 6–10 cm. long, regularly 3 or 4 times compound, the branches opposite or subopposite, the flowers 70 or fewer; bracts deciduous at anthesis, reddish, lanceolate, 2–3 mm. long; bracteoles similar, linear, 1–2 mm. long; buds obconic, 2–2.5 mm. long, the hypanthium densely yellow-strigose with appressed hairs; calyx-lobes low, truncate, thickened, fleshy and verruculose-roughened by their internal glands, the calyx forming a 5-notched ring about 0.5 mm. high at the summit of the hypanthium, the lobes individually about 1.5 mm. wide, ciliate; petals pale yellow, rounded, broad-based, 3 mm. long; anthers 0.3 mm. long; styles at anthesis 1.7 mm. long.—All the collections studied are in bud or with a few flowers in early anthesis; the very short style, and the apparently imperfect development of the hypanthium, in these flowers, suggests that this species is partly or completely dioecious. The original specimens of Poeppig, and those of Mathews, agree well with more recently collected series in all respects (including the very distinctive calyx) except that the leaves are smaller (rarely exceeding 5 cm. in length), short-acuminate, and relatively somewhat broader. F.M. Neg. 23315.

San Martín: San Roque, 1,350–1,500 meters, *Williams 7310, 7390*. Zepelacio, near Moyobamba, 1,200–1,600 meters, *Klug 3264, 3471*.—Huánuco: Between Tingo María and Pucallpa, *Ferreyra 993*. Shapajilla, near Tingo María, *Ferreyra 1583*. Honolulo, near Tingo María, *Ferreyra 2286*. Montes sylvat. ad Cassapi, *Poeppig 1696* [=*Poeppig*

133], type. Cassapi,[1] *Mathews 1957*. Cuchero, *Poeppig Add. 59* (herb. Wien). "Urcu Pichi," "Urcu-Yspi" (Williams). Bolivia; Amazonian Brazil; coastal Ecuador. The name *Aulomyrcia chilensis* was given because Berg erroneously assumed that a part of Poeppig's original material had been collected in that country.

Two collections from near Pongo de Manseriche, *Tessmann 4297* (G; NY) and *4698* (G) are referred to this species with some question. The specimens are larger than usual in *M. aliena*, with buds 3.5–4 mm. long, the disk 3.5 mm. wide, the inflorescence up to 20 cm. long, and the leaves up to 10 cm. wide and 25 cm. long.

Myrcia amazonica DC. Prodr. 3: 250. 1828. *M. corymbosa* DC. l.c. 252. *M. elegans* DC. l.c. 251. *M. lauriflora* DC. l.c. 252. *M. nigrescens* DC. l.c. 246. *M. spixiana* DC. l.c. 251. *Aulomyrcia amazonica* (DC.) Berg, Linnaea 27: 41. 1855. *A. corymbosa* (DC.) Berg, l.c. *Calyptromyrcia elegans* (DC.) Berg, l.c. 34. *A. lauriflora* (DC.) Berg, l.c. 64. *A. nigrescens* (DC.) Berg, l.c. 71. *C. spixiana* (DC.) Berg, l.c. 35. *A. paraensis* Berg, in Mart. Fl. Bras. 14, pt. 1: 76. 1857. *A. pruinosa* Berg, in Mart. l.c. 114. *A. spruceana* Berg, in Mart. l.c. 76.

A tree or large shrub, blackening in drying at least in the inflorescence; inflorescence and young growth thinly appressed-pubescent with red or pale hairs up to 0.3 mm. long, the leaves mostly glabrous except the petiole and the midvein below; leaves coriaceous, elliptic or long-pointed, (2–) 2.5–3.5 (–4) cm. wide, 4–10 cm. long, mostly 2.5–3 times as long as wide, often slenderly acuminate, the base acute to rounded, the margins decurrent on the petiole 3–6 mm. long; midvein impressed above, prominent beneath; lateral veins 10–12 pairs, indistinct above, sometimes slightly elevated, prominulous beneath; marginal vein about equaling the laterals and arched between them, 1–2 mm. from margin; blades usually dull, smooth and black above, at least slightly impressed-punctate, the lower surface reddish-brown, obscurely and finely dark-dotted; inflorescence up to 8–20 cm. long, 3 times compound, the many flowers sessile or short-

[1] The sheets of *Mathews 1957* at Paris and at Kew are without definite locality data. Mr. Sandwith informs me that according to bound vol. no. xxii, pp. 233 and 250, of Miscellaneous Plant Lists at Kew, no. 1957 was received in June, 1835; it was originally identified as "Myrtacea" and it came in the collection made at Cassapi. A sheet at New York is numbered 1597, with the notation "Kew list loc. Tarapoto." In Miscellaneous Plant Lists, vol. xxii, p. 230, at Kew, no. 1597 was provisionally identified as "Carapa??"; it was in the collection from Tarapoto, received on May 9, 1835. Apparently the number on the New York specimen became transposed, and the erroneous locality data were added later after consultation of the records at Kew.

stalked in opposite or alternate pairs along the secondary branches, or aggregated in 3's near the tips; bracts and bracteoles short, linear, deciduous before anthesis; buds obovate, 1.7–2.5 mm. long; hypanthium campanulate or funnelform, glabrous; calyx-lobes 5, broadly rounded, often somewhat unequal, up to 1 mm. wide, 0.5–1 mm. long, ciliate-fringed, the inner surface glabrous or appressed-pubescent; disk hollow, 1.5 mm. wide, glabrous except the staminal ring; style glabrous, 3–4 mm. long; stamens 40–50, up to 5 mm. long, the anthers 0.2 mm. long; petals obovate, 2 mm. wide, 2.5 mm. long; fruit globose to oblate, 4 mm. high, 4–6 mm. across.—Plants of this alliance, comprising one or possibly as many as 8 or 9 species are known from various widely scattered localities in the lower Amazon region, as far west as the Rio Negro and Rio Japurá. Additional research is needed to clarify their relationships, but it appears that the names listed above in synonymy represent a single broadly interpreted species. The chiefly Peruvian *Myrcia yungasensis* (*Aulomyrcia poeppigiana*) is similar to *M. amazonica* but has somewhat larger flowers, the inflorescence is glabrous or essentially so, and the plants blacken but little in drying. Apparently *M. amazonica* proper has not yet been reported from Peru. Specimens collected by Krukoff (nos. 5636 and 5705) near mouth of Rio Macauhan, Rio Acre, Brazil, have the inflorescence-characters of *M. amazonica* but are hardly at all blackened in drying, the leaves are short-acuminate, hairy below, and with the midvein elevated above in a narrow median line; unfortunately the plants are in young bud only; they may represent an undescribed species. F.M. Negs. 19753, 19770, 19780, 19808, 19827, 19838, 19846, 19864, 19866.

Peru (probably). Amazonian Brazil.

Myrcia ambivalens McVaugh, Fieldiana Bot. 29: 188. 1956.

A shrub, the branchlets, inflorescence and petioles densely hirsute with pale or deep yellow, slender flexuous hairs up to 1 mm. long, the leaves sparingly pubescent with similar hairs; leaves ovate, elliptic, or obovate, 3–6.5 cm. wide, 5–12 cm. long, mostly 2–2.5 times as long as wide, tips abruptly and narrowly acuminate, lower half narrowed from the middle and rounded toward the base, at very base abruptly contracted to and very shortly decurrent on the compressed channelled petiole 1–2 mm. wide, 3–4 mm. long; midvein flat above or elevated in young leaves, hairy, prominent beneath; lateral veins 10–12 pairs, strongly ascending, somewhat impressed above, prominent beneath; marginal vein about equaling the laterals and impressed like them, arched between them, 1–3 mm. from

margin; leaves nearly concolorous, greenish brown both sides, eglandular, the upper surface slightly lustrous; inflorescence a broad axillary or falsely terminal panicle 6–8 cm. long and almost as wide, 3 times compound, about 75-flowered, the flowers mostly aggregated near tips; bracteoles deciduous before anthesis, lanceolate, pointed, 1–1.5 mm. long; bracts probably similar, larger; buds 4 mm. long, the corolla concealed until anthesis, the hypanthium elongate, enlarging distally, longitudinally about 10-ridged, the intervals between the narrow darker ridges densely yellow-hairy and contrasting in color; calyx-lobes 5, triangular, 1–1.5 mm. long and wide, glabrous within, the outer surface with tangled yellow hairs paler than those of the hypanthium; flowers not seen open; disk probably 2 mm. wide, long-hairy within and sunken about 1 mm., the style hairy half its length; stamens about 200; petals obovate, somewhat fleshy in bud, silky on the backs, 2–2.5 mm. long; fruit not seen.—Univ. of Mich. Neg. 473.

Loreto: Yurimaguas, in forest, November 7, 1929, *L. Williams 4706, 4737* (F, type).

Myrcia atrorufa McVaugh, Fieldiana Bot. 29: 188. 1956.

Shrub 2 meters high, pubescent to densely short-tomentulose on the branchlets, inflorescence and petioles, and sparingly pubescent on the leaves, with crisped rufous hairs up to 1 mm. long; leaves ovate, 4–6 cm. wide, 10–15 cm. long, 2–2.5 times as long as wide, broadly and bluntly acuminate or obtusely pointed, the base rounded or the extreme base pointed, the margins decurrent on the stout distinct petiole 1–1.5 mm. thick, 8–12 mm. long; midvein impressed and hairy above, prominent beneath; lateral veins about 12 pairs, slightly elevated above, prominulous beneath; marginal vein prominulous beneath, about equaling the laterals and arched between them, 3–6 mm. from margin; leaves drying brown, the upper surface smooth, rufous, eglandular, marked with a coarse reticulum of small veins; lower surface lustrous, greenish-brown, with prominent glands; inflorescence axillary, 2 or partly 3 times compound, about 30-flowered, 7–10 cm. long, the branches much flattened, the peduncle 3–7 cm. long, up to 2.5 mm. wide below the first node; flowers aggregated in triads near the tips of the branches; bracteoles deciduous before anthesis, lanceolate, about 1.5 mm. long; buds 3 mm. long, turbinate, the obconic straight-sided base of the hypanthium densely red-woolly; calyx-lobes 5, rounded or bluntly triangular, about 2 mm. wide, 1.5–2 mm. long, woolly or sparingly pubescent without, appressed-pubescent within; disk about 2.5–3 mm. across, hairy within,

the center sunken about 1 mm.; style glabrous except at base, probably about 4 mm. long; stamens 125–150, up to 4 mm. long, the anthers 0.4 mm. long; petals greenish-white (Metcalf), suborbicular, about 3 mm. long, hairy on the backs; fruit subglobose, about 1 cm. in diameter.—Univ. of Mich. Neg. 460.

Huánuco: Between Huánuco and Pampayacu, Jan. 30, 1927, *R. Kanehira 17*.—Puno: Prov. Carabaya, trail from Santo Domingo to Chabuca mine, elev. 1,900 meters, moist open places with dense vegetation, much fog and rain, May 30–June 1, 1942, *R. D. Metcalf 30671* (US, type).

Myrcia bracteata (Rich.) DC. Prodr. 3: 245. 1828. *Eugenia bracteata* Rich. Act. Soc. Hist. Nat. Paris 1: 110. 1792. *E. hirsuta* R. & P. Fl. Peruv. & Chil. 4: *t. 417a*, ined. [?1802]; G. Don, Gen. Hist. 2: 865. 1832. *M. lanceolata* Camb. in St. Hil. Fl. Bras. Merid. 2: 329. 1829.

A shrub or small tree to 4 meters high, hirsute with lustrous pale yellowish flexuous erect or appressed hairs up to 2 mm. long; bases of hairs sometimes enlarged; leaves lanceolate or elliptic, 1.5–3 cm. wide, 5–9 cm. long, often 3 times as long as wide, gradually or sometimes abruptly acuminate, the very tip blunt; blade almost sessile, the base narrowed, rounded or somewhat auriculate, the dark petiole flat, twisted, up to 2 mm. long and 1.5 mm. wide, expanded distally into a colored area at the base of the blade; midvein on upper surface somewhat impressed, copiously stiff-hairy, prominent beneath; lateral veins inconspicuous, slender, 15–20 pairs; marginal vein about equaling the laterals, 1–1.5 mm. from margin; blades lustrous and sparingly impressed-punctate above, brown-dotted beneath; inflorescence an axillary dichasium, much shorter than the leaves (or occasionally terminal and then longer), usually 2.5–4.5 cm. long, with 5, 7 or 11 flowers on pedicels up to 3 mm. long; nodes of dichasium conspicuously bracteate, the bracts surpassing the flowers, persistent, ovate, trough-shaped at base, blunt-pointed, glabrous within, 4–6 mm. wide, 6–10 mm. long, sometimes minutely ciliate, usually with abundant brownish dots on the outer surface; bracteoles persistent, similar, smaller; perianth 5- (or 4-) parted, the petals white, suborbicular, 3 mm. long; calyx-lobes unequal, the largest like the bracts, 2–3 mm. wide, 2.5–4 mm. long; elongate base of hypanthium concealed by densely aggregated appressed yellowish hairs; disk sericeous or nearly glabrous within, distinctly sunken, about 3 mm. across; style 6 mm. long, sparingly pilose near base or more than half its length; stamens about 150, slightly exceeding the style; fruit

not seen mature, probably hirsute, ellipsoid, about 1 cm. long.—F.M. Neg. 39508.

San Martín: Pongo de Cainarachi, *Klug 2747*. Tarapoto, *Spruce 4857* (herb. G). San Roque, *Williams 7281, 7391*.—Loreto: Balsapuerto, *Klug 2844*. Zepelacio, near Moyobamba, *Klug 3293*. Sachachoro, near Yurimaguas, *Mexia 6087*. Yurimaguas, *Ferreyra 7845, Williams 3797, 4716*. Pebas, *Williams 1880*.—Huánuco: Chicoplaya, *Ruiz & Pavón*. Bolivia to Colombia and the Guianas. "Napurshi" (Yahua, Williams); "Millua-mullaca" (Williams); "Rupiña" (Mexia).

Myrcia concava McVaugh, Fieldiana Bot. 29: 189. 1956.

Tree 6–8 meters high, the vegetative buds, inflorescence and petioles strigose with stiff pale yellowish hairs up to 0.5 mm. long on the buds, mostly shorter; leaves elliptic or ovate, 3–5.5 cm. wide, 7–14 cm. long, 2.3–2.9 times as long as wide, acuminate, cuneate or rounded and subcuneate at base, the margins decurrent on the channeled petiole 1.5 mm. thick, 4–5 mm. long; midvein on the upper surface pubescent, plane distally, impressed near base and the impressed area shortly hispidulous; midvein prominent beneath; lateral veins 15–20 pairs, the number indefinite because of parallel intermediate veins, slightly raised above in drying, prominulous beneath; marginal vein about equaling the laterals and little arched between them, 1–2 mm. from margin; blades somewhat darkening in drying, the upper surface smooth, lustrous, without apparent glands; lower surface paler, yellowish green or yellowish brown, sparingly appressed-hairy and minutely siliceous-verruculose, the glands usually apparent; inflorescence an axillary panicle shorter than the leaves, 7–11 cm. long, 3 to 4 times compound, the branches somewhat compressed and the axis up to 2 mm. wide below the first node; flowers numerous, nearly sessile, clustered near the tips; bracts and bracteoles deciduous before anthesis; buds about 3 mm. long, the hypanthium below the enlargement of the calyx 1.5–1.7 mm. long, obconic with the base abruptly contracted to the pedicel (not attenuate), the surface covered but not obscured by silky whitish, closely appressed hairs about 0.2 mm. long, these diminishing in number distally; calyx lobes suborbicular, broadly rounded or bluntly triangular, 1.3–1.7 mm. wide, 1–1.3 mm. long, pubescent outside, appressed-pubescent within, conspicuously concave and spreading as the petals fall; disk 5-angled, 2–2.5 mm. wide, hairy, the center abruptly depressed; style 4.5 mm. long, hairy below the middle; stamens about 150, up to 5 mm. long, the anthers 0.3–0.4 mm. long; petals suborbicular, concave, hairy outside, up to 3 mm.

wide and 2.5 mm. long; fruit not seen.—This species is separated by no very obvious characters from those of the *fallax-splendens* alliance. It is unlike any of these, however, in its sparingly strigose and broad-based hypanthium, its conspicuous calyx-lobes pubescent within, and its short, stout inflorescence. Univ. of Mich. Neg. 459.

Loreto: Mishuyacu, near Iquitos, 100 meters, forest, *Klug 454, 800* (type, US).

Myrcia connata McVaugh, Fieldiana Bot. 29: 189. 1956.

A shrub 5–6 meters high, the branchlets, leaf-buds and inflorescence (especially the calyx and hypanthium) strigose with straight yellowish hairs up to 0.5 mm. long, at least the young leaves sparingly strigose beneath; leaves sessile, lanceolate, 3.5–5 cm. wide, 9–16 cm. long, about 2.5–4 times as long as wide, acute or obscurely acuminate, blunt at very tip, cordate at base, the auricles of opposite pairs overlapping; midvein impressed above, prominent beneath; lateral veins 12–15 pairs, slender, inconspicuous on both sides, more prominent beneath; marginal vein about equaling the laterals and arched between them, 3–5 mm. from the margin; small veins markedly reticulate in prevailingly right-angled patterns; blades somewhat lustrous above, paler and dull beneath, the glandular dots scarcely apparent; inflorescence a panicle 4–7 cm. long, about 12-flowered, once or twice compound, the peduncle 2.5–4.5 cm. long, 2 mm. wide below the first node; lower branches of the panicle up to 1.2 cm. long; flowers sessile; buds 4–6 mm. long, the hypanthium about 2 mm. long, heavily appressed-hairy; calyx-lobes 5, broadly rounded, appressed-hairy on both sides, 1.3–1.5 mm. long, 2.5 mm. wide; disk about 3 mm. wide, sunken, the hypanthium prolonged 1–1.5 mm. beyond the summit of the ovary; style probably about 10 mm. long; stamens 150–200, 7–8 mm. long, the anthers 0.6 mm. long; petals hairy outside, about 7–8 mm. long and 5 mm. wide; fruit fleshy, about 1 cm. in diameter, a little longer than wide.

Peru (probably). Bolivia.

Myrcia crassimarginata McVaugh, Fieldiana Bot. 29: 190. 1956.

Tree 5 meters high, puberulent on the branchlets, inflorescence and petioles with straight pale yellowish appressed or erect hairs up to 0.5 mm. long, and with a few longer appressed hairs on the

lower leaf surfaces; young branchlets velutinous; leaves elliptic, 7–8 cm. wide, 16–20 cm. long, 2–2.5 times as long as wide, abruptly rounded at tip to a slender acumen 1–1.5 cm. long, rounded at base, the margins prolonged and raised, forming an inclosure at the flat summit of the stout petiole 2.5 mm. thick, 3–6 mm. long; midvein on the upper surface elevated in a narrow, straight-sided ridge 1 mm. wide near base, the ridge impressed like the lateral and marginal veins; laterals about 20 pairs, prominent and raised beneath, much stronger than the intermediate veins; marginal vein equaling the laterals, nearly straight, 3–5 mm. from margin, with a weaker, arched submarginal vein beyond it; upper surface greenish brown in drying, smooth, lustrous, the lower pale brown, minutely verruculose-siliceous; glands not apparent on either surface; inflorescence a broad axillary or falsely terminal panicle 15–23 cm. long and about as wide, rather regularly 4 times compound, many-flowered, the branches mostly opposite, nearly terete near base and 2–2.5 mm. thick, somewhat compressed distally, up to 3 mm. wide below the first node; flowers clustered near tips of branches, the lateral pair of the terminal triads often on pedicels 2–5 mm. long; bracts mostly persistent through anthesis, divaricate, boat-shaped, often broadest above the middle, blunt-tipped, the largest 7 mm. wide, 12 mm. long, the outermost 3 mm. wide, 5 mm. long; bracteoles similar, about 2 mm. wide, 4 mm. long; buds 5 mm. long, broadly obovoid, the densely strigose hypanthium-base conic and 1–1.5 mm. long, broadly expanded to the base of the calyx-lobes, which are broadly rounded, 3 mm. wide, 2.5 mm. long, pubescent outside, appressed-strigose within; disk 3–4 mm. wide, hairy, deeply sunken at center; style 6–8 mm. long, hairy at base; stamens about 300, the longest about as long as the style; petals probably about 4 mm. long, obovate, cream-color (Klug), appressed-pubescent outside; fruit not seen.—A collection made by Tessmann (no. 4319) at the mouth of Río Santiago, on high land, is apparently this species, but in the specimen seen (at NY) the leaves are appressed-pubescent and smooth (not verruculose) beneath. Univ. of Mich. Neg. 477.

Loreto: Fortaleza, near Yurimaguas, alt. about 140 meters, forest, December, 1932, *Klug 2821* (A, type).

Myrcia deflexa (Poir.) DC. Prodr. 3: 244. 1828. *Eugenia deflexa* Poir. Suppl. 3: 124. 1813.

A shrub or small tree to 10 meters high, ochraceous- or rusty-hirsute-pubescent with lustrous, flexuous, slender, erect or matted hairs up to 1 mm. long or more, these intermixed with very numer-

ous very short scurfy inflated hairs; leaves elliptic to ovate, 3–6 (–10) cm. wide, 7.5–15 (–22) cm. long, 2.2–3 times as long as wide, acuminate (often slenderly so), rounded abruptly to base or subcuneate, the basal margins decurrent, prolonged and slightly elevated, forming a pocket-like furrow at the summit of the stout channeled petiole 1.5–2.5 mm. thick, 6–10 mm. long; midvein impressed above at least at base, prominent beneath; lateral veins 15–20 (–25) pairs, sometimes impressed above, prominent beneath; marginal vein relatively close (1–2 mm.) to margin, prominent beneath, sometimes impressed above, only slightly arched between the laterals; blades when dry pale green or brown above, lustrous, and glabrous or essentially so, without apparent glands at maturity but the small reticulate veins forming a fine pattern; lower surface dull, ochraceous, somewhat pubescent on the veins, eglandular, finely bullate, the raised areas corresponding to the spaces between the fine reticulations of the veins and obscuring these; inflorescence a broad axillary or falsely terminal panicle 6–12 cm. long and about as broad, irregularly 3 times compound, many-flowered, the branches opposite or subopposite, striate-angled, compressed (2–2.5 mm. wide below the first node), the flowers sessile or nearly so and aggregated toward the tips of the branches; bracts deciduous before anthesis, scarious, ovate, acute, 1.5 mm. wide, 3 mm. long; bractlets similar, smaller, deciduous at the same time; buds 3–4 mm. long, broadly obconic, the hypanthium densely hairy; calyx-lobes 5, broadly rounded, narrowed at base, imbricate, hairy on both sides, 2.5–4 mm. wide, 2–3 mm. long; disk 2.5–4 mm. wide, sunken, densely hairy; style 5–7 mm. long, hairy near base or up to two-thirds its length; stamens about 250, longer than the style, up to 8 mm. long, the anthers 0.5 mm. long; petals obovate, 5 mm. long; fruit ellipsoid, probably about 1 cm. thick and 1.5 cm. long when mature.—Peruvian representatives of this species have slightly smaller flowers than some specimens from Venezuela and the Guianas, and rufous rather than ochraceous pubescence, but do not seem to differ in other respects. F.M. Neg. 39505.

San Martín: Lamas, *Williams 6389, 6434.* Tarapoto, *Williams 6119.* Amazonian Brazil to the Guianas, Venezuela and the Greater Antilles.

Myrcia dichasialis McVaugh, Fieldiana Bot. 29: 190. 1956.

Shrub or tree to 10 meters high, with trunk diameter up to 25 cm., somewhat variably strigose with closely appressed yellowish hairs up to 0.5 mm. long, the leaf-buds and hypanthium densely strigose, the

lower leaf-surface sparingly so with hairs usually 0.2–0.3 mm. long, the inflorescence often nearly glabrous; leaves ovate, 3–7 cm. wide, 8–15 cm. long, 2–3 times as long as wide, short-acuminate, rounded at base, the margins decurrent on the stout dark petiole 1–2 mm. thick, 6–7 mm. long; midvein flat or sulcate above, prominent beneath; lateral veins 10–12 (–15) pairs, somewhat prominent beneath, diminishing distally, not forming a definite marginal vein but recurving 1–3 mm. from margin and joining the next vein 2.5–10 mm. from margin; upper surface when dry olive green, somewhat lustrous, with small reticulate veins, the lower duller, more yellowish; glands obscure below, barely apparent above; inflorescence a broad axillary or falsely terminal panicle 10–12 cm. long and about as broad, regularly 3 times compound, many-flowered, the branches divaricate and often at right angles to the axis, rather strictly opposite, enlarged and jointed at base, compressed (2–2.5 mm. wide below the first node), the flowers mostly in 3's near the tips of the branches, with the terminal flower sessile or nearly so, or sometimes abortive, the two lateral ones on pedicels 2–6 mm. long; bracts and bracteoles early deciduous; buds about 3 mm. long, broadly obconic; calyx-lobes 5, broadly rounded, 2–3 mm. wide, 1.5–2 mm. long, pubescent without, closely appressed-pubescent within; disk 3–4 mm. wide, sunken, hirsute; style about 7 mm. long, hairy about half its length or near base only; stamens about 200, about as long as the style, up to 8 mm. long, the anthers 0.5 mm. long; petals white, pubescent without, about 4–5 mm. long and wide; fruit dark red, subglobose, 8–10 mm. in diameter.—Univ. of Mich. Neg. 469.

Loreto: Iquitos, *Mexia 6508*. Gamitanacocha, Río Mazán, *Schunke 134* (F, type), *188*. Stromgebiet des Ucayali von 10° S. bis zur Mündung, *Tessmann 3411*. Along Río Itaya, *Williams 91*. Endemic.

Myrcia directa McVaugh, sp. nov.

Arbor, velutina, foliis petiolatis acuminatis 8–11 cm. longis; venis impressis; paniculis multifloris, validis, rachi compressa, usque ad 1.7 mm. lata; calycis lobis utrinque pilosis, duplo triplove latioribus quam longioribus, 0.3–0.5 mm. longis; alabastris 2 mm. longis.

A small tree 18 feet high (Spruce), the branchlets, young leaves, and inflorescence velutinous with stiff slender-pointed erect brownish red hairs 0.5–1 mm. long; leaves elliptic-ovate, 3.5–5.5 cm. wide, 8–11 cm. long, 2–3 times as long as wide, gradually or abruptly acuminate, rather broadly rounded at base, the margins passing abruptly

into the shallowly grooved and nearly terete petiole 1.5–2 mm. thick, 8–12 mm. long; midvein on upper surface sunken and hirsute at base, passing distally into an elevated ridge, prominent beneath, raised from the lower surface by its own diameter (about 1.5 mm. near the base of the blade); lateral veins 12–15 pairs, impressed above, conspicuous beneath and stronger than the intermediate ones, straight or nearly so (whence *directa*) and passing directly into the marginal vein which is impressed above, about equaling the laterals and somewhat curved between them, 2–3 mm. from the margin; blades darkening in drying, glabrate and lustrous above, the lower surface persistently velutinous at least on the veins, finally glabrate and finely pebbled; glandular dots not apparent on either surface; inflorescence a relatively broad axillary or falsely terminal panicle, 3.5–7 cm. long and almost as wide, 3 times compound, 50- to 75-flowered, with the branchlets mostly at right angles, the flowers sessile in terminal clusters; peduncle compressed and markedly bicarinate, 1.5–1.7 mm. wide just below the lowest node; bracts and bracteoles deciduous before anthesis, the bracteoles linear, 0.6 mm. long; buds 2 mm. long or less; hypanthium hemispheric, about 1.5 mm. long and less than 2 mm. wide, densely velutinous with hairs up to 0.3 mm. long; calyx-lobes 5, rounded, very short, about 1 mm. wide, 0.3–0.5 mm. long, fleshy at base, hairy on both sides but neither surface obscured by the hairs, the tips somewhat incurved and the calyx as a whole truncate and flaring out at the summit of the hypanthium; disk 2 mm. wide, strigose, concave, fleshy, lobulate, the lobes opposite the petals; style 2.5–3 mm. long; stamens about 30, 2.5 mm. long, the anthers 0.3 mm. long; petals obovate, glabrous or strigose on the outer surface, 2–2.5 mm. long and wide; ovary bilocular, the ovules 2 in each locule, collateral; fruit not seen.—Univ. of Mich. Negs. 1094, 1102.

San Martín: "In fruticetis montis Campana, prope Tarapoto, alt. 4800 ft.," Dec., 1855, *R. Spruce 4388* (herb. Kew ex herb. Benth., type; herb. Kew ex herb. Hook.).

Myrcia dispar McVaugh, Fieldiana Bot. 29: 191. 1956.

A tree "45 feet" high (Krukoff), the branchlets, vegetative buds, petioles and inflorescences abundantly velutinous with soft appressed-ascending pale golden-yellow hairs 0.6–0.8 mm. long; leaves coriaceous, elliptic to ovate or obovate, 4–7.5 cm. wide, 10–15 cm. long, about twice as long as wide, rounded or obtuse at apex and usually obscurely apiculate, acute at base, the margins decurrent on the sulcate petiole 2 mm. thick, 7–10 mm. long; midvein hairy above when young, the distal two-thirds elevated in a narrow median ridge but

the whole (including the ridge) impressed above and prominent beneath; lateral veins 12–15 pairs, convex but somewhat impressed, prominent beneath; marginal vein narrower than the laterals, not impressed above, nearly straight between the laterals, 1–2.5 mm. from margin; blades dark and lustrous above, paler beneath and there somewhat strigose and minutely pale-verruculose; glandular dots not apparent in mature leaves; panicle 4–5 cm. long (much shorter than the leaves, whence the name *dispar*), stout, probably twice compound, the peduncle compressed, 2–3 cm. long, 2.5 mm. wide below the first node; flowers not seen, probably about 20 or fewer, nearly sessile; fruit globose, 1–1.5 cm. in diameter, gland-dotted, sparingly hairy, crowned by the erect calyx; calyx-lobes 5, rounded with tips incurved in fruit, 2–2.5 mm. long, 2.5–3 mm. wide, pubescent both sides (sparingly so within in fruit); disk 3 mm. wide, the hypanthium prolonged 1.5 mm. above the summit of the ovary, both disk and inner surface of the hypanthium densely hairy; seeds 1 or 2, reniform, 1 cm. long, with lustrous cartilaginous testa and typical myrcioid embryo.—Known only from the type, which is in fruit (Brazil, Terr. of Acre, upper Rio Jurupary, *Krukoff 5232*), but apparently distinct from all known species in the short, stout inflorescence, relatively large flowers, blunt, coarsely veined leaves and copious distinctive indument.

Peru (probably). Amazonian Brazil.

Myrcia egensis (Berg) McVaugh, Fieldiana Bot. 29: 191. 1956. *Aulomyrcia egensis* Berg, in Mart. Fl. Bras. 14, pt. 1: 99. 1857. *A. macrophylla* Berg, in Mart. l.c.

Tree 4 meters high, the branchlets, vegetative buds and petioles hirsutulous with stout straight ascending yellowish-white hairs up to 1 mm. long; inflorescence abundantly hirsutulous but the hairs shorter, of uneven lengths, and rufous in color; lower leaf-surface thinly appressed pubescent with pale yellow hairs about 0.5 mm. long; leaves ovate or elliptic, 4.5–11.5 cm. wide, 12–26 cm. long, 2–2.7 times as long as wide, acuminate at tips, rounded at base, the margin often cuneately narrowed at very base and decurrent on the stout channeled petiole 2 mm. thick, 8–12 mm. long; midvein sulcate above and hairy at least near base, prominent beneath; lateral veins 10–15 pairs, distinctly marked above and very slightly impressed, prominulous beneath; marginal vein weaker than the laterals, somewhat arched between them, 1–3 mm. from margin; leaves darkening in drying, the upper surface brown to black, lustrous, smooth, the lower yellowish- or grayish-brown because of the pubescence and the

loosely cellular structure of the pale irregular epidermis; glands not apparent on either surface; inflorescence a broad, usually axillary panicle 11–15 cm. long, irregularly 3 times compound, many-flowered, the branches often subopposite, compressed, 2.5–3 mm. wide below the first node, the flowers sessile and aggregated near the tips of the branches and mostly alternate along them; bracts and bracteoles deciduous at or before anthesis, the bracteoles lanceolate, hirsutulous, up to 1.5 mm. long; buds 3.0–3.5 mm. long, the hypanthium about half this length, obconic, densely rufous-hirsutulous, abruptly expanded at summit into the calyx; calyx-lobes 5, rounded, strongly unequal, the larger scarious-margined, up to 3 mm. wide, 2.3 mm. long, the smaller less than 1 mm. wide, 1.3 mm. long; disk 2–2.5 mm. wide, hairy, deeply sunken; style 6–7 mm. long, hairy below the middle; stamens about 100, up to 7 mm. long, the anthers very small, about 0.3 mm. long; petals obovate, cream-color (Klug), 3.5–4 mm. long; fruit probably globose and 1 cm. in diameter, not seen mature. —The type of this species, *Poeppig 2551*, is from Ega, Brazil. F.M. Negs. 19818, 31521.

San Martín: Zepelacio, near Moyobamba, 1,200–1,600 meters, *Klug 3569*. Amazonian Brazil.

Myrcia fallax (Rich.) DC. Prodr. 3: 244. 1828. *Eugenia fallax* Rich. Act. Soc. Hist. Nat. Paris 1: 110. 1792. *Myrtus acuminata* HBK. Nov. Gen. & Sp. 6: 141 (folio ed. p. 112). 1823. *Myrtus complicata* HBK. l.c. *Myrcia acuminata* (HBK.) DC. l.c. 256. *Myrcia berberis* DC. l.c. 254. *Myrcia complicata* (HBK.) DC. l.c. 255. *Myrcia macrophylla* DC. l.c. 248. *Myrcia magnoliaefolia* DC. l.c. *Myrcia acuminata α genuina* Berg, Linnaea 27: 94. 1855. *Myrcia acuminata δ peruviana* Berg, l.c. *Myrcia chilensis* Berg, l.c. 99. *Myrcia barrensis* Berg, in Mart. Fl. Bras. 14, pt. 1: 187. 1857. *Myrcia berberis β angustifolia* Berg, in Mart. l.c. 170. *Myrcia brandami* Berg, in Mart. l.c. 164. *Myrcia hayneana β paraensis* Berg, in Mart. l.c. 187. *Myrcia kegeliana β longifolia* Berg, in Mart. l.c. 168. *Myrcia latifolia* Berg, in Mart. l.c. 170. *Myrcia negrensis* Berg, in Mart. l.c. 187. *Myrcia spruceana* Berg, in Mart. l.c. 165. *Myrcia subsessilis β ovalis* Berg, Linnaea 31: 252. ?1862. *Myrcia dictyoneura* Diels, Engl. Bot. Jahrb. 37: 594. 1906.

A tree or large shrub up to 12 meters high, sparingly pubescent with lustrous yellowish-white hairs about 0.2 mm. long; hairs appressed or in the inflorescence sometimes spreading, confined chiefly to the hypanthium, where always densely aggregated, and to the branches of the inflorescence, the calyx-lobes, the petioles and the

lower leaf-surface; pubescence on mature plants sometimes almost none except on the hypanthium; leaves elliptic to ovate-lanceolate, 2–6 cm. wide, 6–14 cm. long, (2–) 2.5–3 (–4.5) times as long as wide, the blades rather abruptly narrowed to both ends or more gradually narrowed to apex, prominently acuminate, the acumen blunt at very tip; base of blade cuneate or somewhat rounded, the margins slightly decurrent on the stout dark-colored ventrally grooved petiole which is 1–1.5 mm. thick, 5–7 mm. long; upper surface of blade smooth and lustrous, bright green or darkening in drying, the midvein impressed or sulcate at least near base, glabrous or nearly so except at base, the other veins when dry slightly raised and evidently reticulate; lower surface paler, dull green, the midvein prominently elevated, the about 15 pairs of lateral veins somewhat elevated and readily distinguished (more readily than on the upper surface) from the smaller intermediate veins; marginal vein about equaling the laterals, and arched between them, 1–1.5 (–3.5) mm. from the slightly revolute leaf-margins; glandular dots sometimes apparent on new leaves, rarely on mature leaves, never impressed on the upper surface; inflorescence axillary and (often) subterminal, up to 12 cm. long, often about as long as the leaves, many-flowered, irregularly 3 times compound, the branches opposite or subopposite, strongly flattened below the nodes (2–2.5 or even 3.5 mm. wide below the first node), the branchlets of the ultimate (usually third) order little elongated and the flowers thus nearly sessile and aggregated toward the tips of the branches; buds 2.2–2.5 mm. long just before anthesis, the hypanthium narrowly conic; calyx-lobes 5, drying dark, sparingly strigose to glabrous without, glabrous within, broadly rounded to occasionally triangular, about 1–1.5 mm. long and 1.5–1.8 mm. wide, often remaining loosely erect in post-anthesis and fruit; disk 1.3–2 (–2.5) mm. wide, densely hairy, slightly sunken in the middle; style 3–4 (–5) mm. long, glabrous except for a few hairs at base; petals white; stamens about 100–125, 4–5 mm. long; fruit oblong to nearly globose, 4.5–7 mm. thick, 6.5–10 mm. long; seed 2 mm. long or less. —This species, as defined here, ranges from the Lesser Antilles and Panama through most of tropical South America, chiefly east of the Andes, at elevations from near sea level to about 2,800 meters. It is particularly abundant as a tree of clearings and forest edges, at elevations below 1,000 meters. It belongs to a group of species which are taxonomically among the least understood in the genus. From northern Peru to Colombia (Antioquia) and Venezuela (Mérida) the principal representative of this species complex is *Myrcia acuminata* (HBK.) DC., which is distinguished from *M. fallax* chiefly by the

presence of soft rusty-brown hairs (up to almost 1 mm. long) in the inflorescence and on the young shoots and leaves; the lower leaf-surfaces more or less permanently short-pilose with similar, usually erect hairs, especially on the principal veins; calyx-lobes relatively longer than in *M. fallax* and in Colombian material often as long as wide; branches of the inflorescence somewhat less compressed than in *M. fallax;* disk 2–2.5 (–3) mm. wide; style 5 mm. long. F.M. Negs. 7917, 19758, 19760, 19802, 19817, 19819, 19828, 19865, 23436, 23441, 23443, 23444, 31445, 31453, 36875.

Cajamarca: Prov. Jaen, valley of the river Tabaconas, 900–1,000 meters, *Weberbauer 6168* (*acuminata*). East side of the cordillera east of Huancabamba, *Weberbauer 6123* (*acuminata*).—San Martín: Moyobamba, *Mathews 1454*.—Loreto: Along Río Itaya, *Williams 95*. Maquisapa, upper Río Nanay, *Williams 1194*. Tarapoto, *Williams 5384, 5874, 5890, 6115, 6130, 6324, 6420*. San Roque, *Williams 7123*.—Huánuco: Chinchao, *Sawada 82*. Near Pampayacu, *Kanehira 51*. Monzón, *Weberbauer 3547*, isotype of *M. dictyoneura* (herb. USM). Cuchero, *Poeppig 1652B* [=*Poeppig 138*, =*Poeppig Add. 60*], type of *M. chilensis*.—Río Acre: Seringal S. Francisco, *Ule 9662*.—Locality uncertain: Arenal, *Jelski 334*, Mar. 16, 1878 (herb. W). "Ahuashi yacu," "Yspi" (Williams). Bolivia and Amazonian Brazil to the West Indies and Panama. Berg erroneously supposed that a part of Poeppig's collection, to which the numbers 1652B and 138 were assigned in some herbaria, had originated in Chile, and the name *Myrcia chilensis* was based upon these specimens.

Myrcia complicata (HBK.) DC. also appears to be conspecific. The type is a flowering specimen, moderately pale-strigose as in *Myrcia splendens*, with rounded calyx-lobes as in *M. acuminata*, but with the long petioles, nearly smooth leaves and strongly flattened inflorescence-branches of *M. fallax*. F.M. Neg. 36883.

Cajamarca: Prov. Jaen de Bracamoros, prope San Felipe, alt. 980 hex., *Bonpland* (type of *M. complicata*).

Myrcia platycaula Diels (Bot. Jahrb. 37: 595. 1906), from mountains near Monzón, 2,000–2,500 meters, Dept. Huánuco, *Weberbauer 3531*, is a member of the same species complex. It is known to me only from a fragmentary specimen preserved in USM. The inflorescence is partially developed and the flowers have not opened. It differs from *M. mollis* (*M. huanocensis*), with which it was compared by Diels, in having the leaves and inflorescence sparingly appressed-hairy instead of copiously hirsute. It differs from Peruvian representatives of the *acuminata-fallax* group in having the calyx

abundantly appressed-silky within. Better material is needed before this species can be definitely placed.

Myrcia fasciata McVaugh, Fieldiana Bot. 29: 192. 1956.

A tree 12 meters high, the vegetative buds thickly appressed-strigose with lustrous yellowish-white stiff hairs up to 0.8 mm. long, a few similar hairs on the petioles, inflorescence and the veins of the lower leaf-surface, the hairs on the hypanthium numerous, dark reddish brown; leaves lustrous, coriaceous (Steyermark), broadly ovate, 4.5–9 cm. wide, 7–12 cm. long, mostly 1.3–1.5 times as long as wide, rounded or emarginate at apex, broadly rounded at base, the margins shortly decurrent on the channeled petiole 1.5–3 mm. thick, 7–12 mm. long; midvein impressed above, prominent beneath; lateral veins 8–10 pairs, impressed above, prominulous beneath; marginal vein a little weaker than the laterals and strongly arched between them, inconspicuous above, prominulous beneath, 2–6 mm. from margin; leaves drying brownish green, paler beneath, lustrous on both surfaces, with scattered small glands, these impressed on the upper surface but often obscure at maturity; inflorescence axillary, to 10 cm. long, or consisting of shorter fertile branches arising laterally in the axils of small leaves (up to 2 cm. wide, 4 cm. long) near the base of new leafy shoots; branches and peduncle much flattened, the latter often equaling or exceeding in length the rest of the inflorescence, distally enlarged, up to 3–4 mm. wide and hardly 1 mm. thick; flowers about 25, sessile or in 3's on short lateral branches near the tips of the panicle; bracteoles deciduous at anthesis, lance-subulate, hairy, 2 mm. long; immature buds 2 mm. long, narrowly conic; flowers not seen open; calyx-lobes broadly rounded, 1.5–1.7 mm. wide, 1 mm. long or a little more, pubescent both sides; disk about 2.5 mm. wide, hairy, with sharply depressed center; fruit about 1 cm. in diameter, subglobose, puberulent, 1- to 4-seeded.—Known only from the two original collections from the Province of Azuay, Ecuador, *Steyermark 52961* and *52969* (F, type).

Peru (probably). Ecuador.

Myrcia fascicularis Berg, Linnaea 27: 87. 1855. *M. bangii* Rusby, Mem. Torr. Bot. Club 6: 36. 1896.

A shrub or tree to 8 meters high, the branchlets, inflorescence and lower leaf-surface short-hirsute with yellowish or brownish-yellow spreading or appressed hairs up to 0.5 mm. long; leaves ovate to lanceolate, 4.5–9 cm. wide, 13–21 cm. long, 2–3 (–4.5) times as long as wide, gradually or abruptly acuminate, narrowed toward base

from below the middle and thus long-cuneate, or more abruptly rounded and shortly cuneate at base, the margins decurrent on the stout petiole 1–2 mm. thick, 6–7 mm. long; midvein slightly impressed above and short-pubescent at least toward base, prominent beneath (raised its own thickness above the surface); lateral veins (15–) 20–25 pairs, slightly elevated both sides, prominent beneath; marginal vein about equaling the laterals, nearly straight, distinct and prominent beneath, 1–2 mm. from margin; blades above lustrous, green or darkening in drying, glabrous, thickly impressed-puncticulate; lower surface duller, yellow-green, colored and often obscured by the numerous appressed or erect hairs, the glands not apparent; inflorescence a short-pedunculate much-branched axillary panicle up to 6 cm. long, the branches strongly flattened, ascending; main axis up to 1 cm. long, tangentially much flattened, 1–2 mm. wide, the lowest pair of branches often arising in the axil also, and the inflorescence appearing fasciculate; flowers sessile, clustered in 3's near the tips of the branches, or solitary; bracts and bracteoles deciduous before anthesis, scarious, the bracteoles lanceolate, 1 mm. long; buds 2.5–3 mm. long, the hypanthium long-conic or nearly cylindric, somewhat angled or ridged, densely appressed-hairy, longer than and contrasting with the dark calyx-lobes; lobes broadly and bluntly triangular or rounded, more than 1 mm. wide, 1 mm. long, hairy and gland-dotted without, glabrous within; disk 2 mm. wide, sunken, hairy; style 5 mm. long, hairy more than half its length; stamens 80–100, about as long as the style, the anthers 0.3 mm. long; petals suborbicular, hairy on the back, about 2.5 mm. long; fruit unknown.—The specimens collected by Klug and Williams have broader leaves than those of the type and most other known collections, and the pubescence is more closely appressed. F.M. Neg. 23445.

San Martín: Tarapoto, *Williams 6732*.—Loreto: Mishuyacu, *Klug 705, 836*.—Huánuco: Cuchero, *Poeppig 1652* [=*141*], type. Bolivia. Reported from Chile by Berg, who erroneously supposed a part of Poeppig's original collection to have come from that country.

Myrcia fenestrata DC. Prodr. 3: 251. 1828.

A shrub or small tree to 5 meters high, the inflorescence sparingly hispidulous with sharp, slender, erect pale yellowish hairs up to 0.6 mm. long (usually shorter); vegetative buds and hypanthium densely appressed-strigose with similar hairs; petioles and base of midvein below with a few somewhat stouter golden hairs up to 2 mm. long; leaves finely hispidulous above; branchlets, including those of the

inflorescence, strongly compressed; leaves ovate or lanceolate, 2.5–4.5 cm. wide, 7–13 cm. long, 2.5–4 times as long as wide, rather long-acuminate, rounded at base and the margins there strongly decurved but raised above the very short petiole 1–2 mm. thick, 1.5–2 mm. long; midvein and the 15–20 pairs of lateral veins impressed above, the areas between the latter raised in convex elongate parallel areas which are similarly concave beneath and the veins correspondingly elevated and markedly ladder-like, the midvein raised more than its diameter above the lower surface; marginal vein obscure on both sides, about equaling the laterals and somewhat arched between them, 1–1.5 mm. from margin; blades lustrous and polished above, green or darkened, the lower surface somewhat lustrous, yellowish brown or green, appearing thinly silicified and minutely verruculose; surfaces obscurely and sparsely gland-dotted, or no glands apparent; stipuloid processes conspicuous, 2–2.5 mm. long; inflorescence a short-pedunculate axillary panicle much shorter than the leaves, the branches gland-dotted, the primary axis strongly flattened, 2–6 (–11) mm. long and 2 mm. wide, its lowest branches somewhat ascending, 4–6 cm. long, irregularly twice compound, the numerous flowers nearly sessile along the secondary branches or in triads near the tips; bracts deciduous at early anthesis, the larger ovate, pointed, up to 3 mm. wide and 5 mm. long, hairy outside; bracteoles similarly deciduous, lanceolate, 1–2.5 mm. long; buds 2–2.5 mm. long, nearly globose, the hypanthium broadly obconic; calyx-lobes 5, pubescent both sides, broadly rounded, about 1.5 mm. wide and 1 mm. long; disk hairy, slightly depressed in center, 1.5–2 mm. wide; style 4–5 mm. long, hairy about half its length; stamens about 150, as long as the style, the anthers about 0.3 mm. long; petals suborbicular, 2–2.5 mm. long; fruit subglobose, about 5 mm. in diameter.—F.M. Neg. 19786. First collected by Martius, near Ega, Brazil, this species is well known in the vicinity of Manaus and at other localities in the upper Amazon Basin.

Peru (probably). Amazonian Brazil.

Myrcia huallagae McVaugh, Fieldiana Bot. 29: 192. 1956. *M. lanceolata* γ *grandifolia* Berg, in Mart. Fl. Bras. 14, pt. 1: 155. 1857.

A shrub or woody vine up to 3–4 meters high, hirsute with lustrous red-brown erect stiff or flexuous hairs up to 3.5 mm. long; leaves elliptic-lanceolate, 3–4 cm. wide, 8–12 cm. long, often 3 times as long as wide, acute or rather abruptly acuminate, the very tip blunt; petiole enlarged and dark in color, 4–5 mm. long, 1 mm. thick,

abruptly contracted at the summit and appearing to be attached to the lower surface of the blade, the base of the blade prolonged 1–2 mm. on each side into an auricle; midvein on upper surface scarcely impressed, short-hairy, the hairs paler and more slender than those elsewhere on the plant; lateral veins inconspicuous, slender, 15–20 pairs (4–6 mm. apart); marginal vein equaling the laterals, 1 mm. from margin; blades sparingly impressed-punctate above, not visibly punctate beneath; stipuloid processes acicular, 2.5 mm. long; inflorescence axillary, racemoid, few-flowered, much shorter than the leaves, up to 4 cm. long, conspicuously bibracteate at the 1–3 nodes, the bracts surpassing the flowers, persistent, ovate, trough-shaped at base, acutely pointed, glabrous within, 5 mm. wide, 9–12 mm. long, sparingly dark-dotted, finely ciliate, with evident midvein; bracteoles similar, smaller; flowers solitary on the branches, or in 3's at the tips of the lowest branches and the tip of the axis; perianth 4-parted, the petals white, roundish, about 5 mm. long, the sepals in 2 unequal pairs, foliaceous, the larger pair like the bracts, 3 mm. wide, 6 mm. long, the smaller similar, narrower, 5 mm. long; hypanthium with elongate base 1 mm. thick, 2 mm. long, this concealed by the thickly aggregated appressed reddish hairs; disk thickly hairy, distinctly sunken, 3.5 mm. across; style 6 mm. long, hirsute at base for two-thirds its length; stamens slightly exceeding the style; fruit ellipsoid, hirsute, 10 mm. thick, 13 mm. long, crowned with the ascending sepals.—Univ. of Mich. Negs. 1019, 1032.

Loreto: Yurimaguas, *Killip & Smith 27976, 28188, Williams 3837, 3888, 4715.* "In sylvis ad Huallagam," Feb., 1831, *Poeppig 2267* (type, herb W). Endemic.

Myrcia madida McVaugh, Fieldiana Bot. 29: 192. 1956.

A tree up to 12 meters high, nearly glabrous but the inflorescence, petioles, vegetative buds, lower leaf-surfaces, and young shoots bearing very small appressed pale hairs 0.1–0.3 mm. long, these often wanting or nearly so except on the strongly whitened leaf buds and the hypanthium, where densely aggregated and somewhat felted together in drying as if moistened (*madida*, drenched, sodden); leaves lustrous and coriaceous, elliptic to ovate or obovate, (4–) 6–9 cm. wide, (9–) 18–23 cm. long, 2.3–3.5 times as long as wide, prominently and slenderly acuminate, the base rounded but the basal margins often inrolled and the whole appearing subcuneate, the margins decurrent on the stout dark channeled petiole 1.5–2 mm. thick, 8–11 mm. long; midvein channeled above near base, distally plane or finally somewhat raised in a narrow ridge, prominent beneath; lat-

eral veins 15–18 pairs, evident above, prominulous beneath; marginal vein about equaling the laterals, somewhat arched between them, 1.5–3 mm. from margin; leaves olive green or somewhat browning in drying, smooth and lustrous above with finely reticulate small veins, dull and pale brown or subglaucous beneath, very finely and rather thinly appressed-strigose, the surface very minutely roughened by the loosely arranged epidermis; glands not apparent in mature leaves; inflorescence a somewhat irregularly 3 to 4 times compound axillary (or terminal) panicle, 12–17 cm. long and about as wide, the branches strongly flattened, enlarged and jointed at base, the main axis up to 3.5 mm. wide below the first node; flowers numerous, aggregated mostly in threes on short peduncles near the tips of the branches, the individual flowers on pedicels about 0.7 mm. thick and up to 1 mm. long; bracts and bracteoles deciduous before anthesis; buds 4–4.5 mm. long, broadly obconic, the hypanthium about as long as the calyx-lobes, its felted pubescence diminishing distally; calyx-lobes broadly rounded, imbricated, unequal, 2–3 mm. wide, 1.5–2.5 mm. long, appressed-pubescent within, sparingly strigose without; disk 2.5–3 mm. wide, hairy, the center depressed; style about 6 mm. long, hairy near base; stamens about 125, longer than the style (up to 7–9 mm. long), the anthers 0.5–0.6 mm. long; petals obovate, pubescent outside, about 4 mm. long; fruit black, ellipsoid, 7–9 mm. thick, 10–13 mm. long.—Univ. of Mich. Neg. 492.

Loreto: Río Napo near Mazán, alt. 110 meters, overhanging river, Jan. 27, 1932, *Mexia 6448* (F, type). Manfinfa, upper Río Nanay, *Williams 1088*.

Myrcia mathewsiana (Berg) McVaugh, comb. nov. *Aulomyrcia mathewsiana* Berg, Linnaea 27: 45. 1855.

A shrub or tree, darkening in drying; young branchlets, young leaves, and inflorescence appressed-puberulent with slender, flexuous rufous hairs (their bases copper-colored, the tips white) up to 0.5 mm. long; leaves lanceolate to ovate or elliptic, glabrous except the thinly strigose midvein and petiole, 2.7–6 cm. wide, 7–12.5 cm. long, (1.5–) 2.5–3 times as long as wide, the tip caudate-acuminate to acute, the very tip blunt; base rounded; petiole black in drying, 1.5–2 mm. thick, 5–6 mm. long; midvein impressed above; lateral veins 10–15 pairs and some intermediate ones, reticulate, slightly raised on both sides; marginal vein about equaling the laterals, arcuate between them, 2–4 mm. from margin; blades when dry often black above, reddish-brown beneath; glandular dots not apparent in dried specimens; inflorescence many-flowered, irregularly 4 to 5 times com-

pound, 10–15 (–20) cm. long, the branches compressed below the nodes, the middle nodes sometimes leaf-bearing; hypanthium 1.5 mm. long in anthesis, turbinate, densely appressed-puberulent with hairs like those of the inflorescence branches; calyx-lobes strigose (often sparingly so) or nearly glabrous, deltoid, about 0.8 mm. wide and long, reflexed after anthesis; disk 1.5 mm. wide; style 3–3.5 mm. long; petals 1.5 mm. long; stamens 40–50; fruit (not seen mature) probably globose, about 5–6 mm. in diameter.—F.M. Neg. 23331.

Loreto: Prov. of Moyobamba, 800–900 meters, *Weberbauer 4473*. Prov. of Moyobamba, *Mathews s.n.*, *Mathews 1453*. The type (herb. W, not seen) is *Mathews s.n.*, "in provincia Chachopayos Peruviae." Bolivia and Amazonian Brazil.

Myrcia mollis (HBK.) DC. Prodr. 3: 256. 1828. *Myrtus mollis* HBK. Nov. Gen. & Sp. 6: 141 (folio ed. 112). 1823. *Myrcia huanocensis* Berg, Linnaea 31: 250. ?1862. *Eugenia boliviensis* Rusby, Mem. Torr. Bot. Club 3, pt. 3: 28. 1893.

Shrub or small tree 1–5 meters high, the inflorescence, branchlets and lower surface of the leaves loosely hirsutulous, with spreading or ascending soft tawny yellow or brownish hairs up to 0.5 or 1 mm. long; leaves ovate, 4–6 cm. wide, 8–14 cm. long, 2–2.3 (–2.5) times as long as wide, broadly and bluntly (or occasionally narrowly) acuminate, rounded at base, the margins abruptly decurrent on the stout channeled petiole 1.5–2.5 mm. thick, 2–4 (–6) mm. long; midvein somewhat impressed and pubescent above, prominent beneath; lateral veins 10 (–15) pairs, evident and usually impressed above, prominulous beneath; marginal vein about equaling the laterals and rather strongly arched between them, 1–4 mm. from margin; leaves mostly drying green, the upper surface lustrous and nearly glabrous, marked with the reticulate pattern of the small veins, obscurely glandular with mostly impressed dots when young, the glands not apparent at maturity; lower surface hirsutulous at least on the veins, yellowish- or brownish-green, without apparent glands; inflorescence a broadly axillary or falsely terminal panicle, rather regularly 3 times compound, the many flowers mostly sessile in 3's near the tips, or the lateral pair of the terminal triad on pedicels up to 5 mm. long; branches of the panicle flattened, up to 2.5 mm. wide below the first node; bracts and bracteoles deciduous at anthesis, the latter elliptic or ovate, bluntly pointed, 1–2 mm. wide, 2–2.5 mm. long; buds about 4 mm. long, the hypanthium obconic, conspicuously tawny- or rufous-hirsute, expanded distally into the calyx; calyx-lobes broadly

rounded, 5, somewhat unequal, 2.5–3 mm. wide, 2–2.5 mm. long, soft-hairy both sides; disk 3–3.5 mm. wide, hairy, the center depressed; style (5–) 6.5–7 mm. long, hairy half its length; stamens about 150, as long as the style or up to 10 mm. long, the anthers 0.5–0.6 mm. long; petals obovate, hairy outside, white, about 4 mm. long; fruit not seen.—Still to be worked out is the taxonomy of the several species of *Myrcia* of this alliance, described by Kunth from the collections of Bonpland. The species, all described in the genus *Myrtus* and later transferred by DeCandolle to *Myrcia*, include *M. acuminata*, *M. complicata*, *M. polyantha* and *M. mollis*. These species all belong to the same general group to which *M. fallax* also belongs; these have small flowers and relatively coarse panicle-branches, the hypanthium densely strigose even if the rest of the inflorescence is glabrous, and the fruit usually ellipsoid. As I understand *M. fallax*, that species has the panicle sparingly appressed-hairy or nearly glabrous, and the leaves appressed-pubescent; the calyx-lobes are short, and glabrous on the inner surface. In *M. acuminata*, which I regard for the purposes of this *Flora* as synonymous with *M. fallax*, the pubescence is more copious, the hairs are somewhat more erect, and the calyx-lobes are often as long as wide or a little longer. Peruvian specimens with the panicle hirsutulous but the calyx-lobes glabrous within, and the disk about 2 mm. broad, have been referred to *M. fallax*. Typical *M. mollis*, of Colombia, has flowers about the same size (disk 2 or as much as 3 mm. broad, style about 5 mm. long) as those of *M. acuminata;* the plant is generally soft-hirsute, and the calyx-lobes are appressed-pubescent within. The Peruvian specimens referred to *M. mollis* have larger flowers than most Colombian specimens, but the collection from Lambayeque (*Esposto s.n.*) seems otherwise indistinguishable from typical *mollis*. The hairs of the panicle rarely exceed 0.5 mm. in length, the style is about 5 mm. long, the petioles are well-marked, 4–6 mm. long, and the flowers are crowded near the tips of the branchlets. Ule's no. 9659 belongs to a well-marked entity of the trans-Andean lowlands of Bolivia and Peru which perhaps represents a distinct species, marked by its nearly sessile leaves, greater length of the hairs and the style, and a tendency for the terminal flowers to be pedicellate. F.M. Negs. 19793, 36897.

Lambayeque: Monte Seco, quebrada del Río Zaña, *N. Esposto* (USM).—Huánuco: Without locality, *Haenke* (herb. M, type of *M. huanocensis*).—Río Acre: Seringal Auristella, *Ule 9659*. Bolivia to Colombia and Venezuela.

Myrcia multiflora (Lam.) DC. Prodr. 3: 244. 1828. *Eugenia multiflora* Lam. Encyc. 3: 302. 1789. *M. sphaerocarpa* DC. l.c. 251. *Aulomyrcia multiflora* (Lam.) Berg, Linnaea 27: 47. 1855. *A. sphaerocarpa* (DC.) Berg, l.c. 51. *A. sphaerocarpa* ζ *complicata* Berg, in Mart. Fl. Bras. 14, pt. 1: 86. 1857. *A. laruotteana* η *peruviana* Berg, in Mart. l.c. 91. *Myrtus fragrans* [Ruiz] Herb. Flor. Peruvian., ex Berg, l.c.

A shrub or small tree, nearly glabrous, the leaf-buds and young branchlets, and the inner surface of the calyx-lobes, bearing silvery- or yellowish-white hairs up to 0.4 mm. long; leaves not darkening in drying, ovate, or varying toward elliptic, (1.3–) 2–3 cm. wide, (3–) 5–8 cm. long, often 2.5 times as long as wide, the tip prolonged into a conspicuous blunt curved acumen, the base rounded; petiole less than 1 mm. thick, 3–5 mm. long; midvein moderately or scarcely impressed above, prominent beneath; veins strongly reticulate on both surfaces, the laterals about 10 pairs, with numerous intermediates; marginal vein strongly arched between the laterals, (1–) 2–4 mm. from margin; light brown glandular dots abundant and conspicuous on both surfaces; inflorescence axillary or falsely terminal, up to 12 cm. long, often exceeding the leaves, 3 to 5 times compound, many-flowered, its branches nearly terete, the axis about 1 mm. in diameter; upper branches often alternate and the ultimate dichasia racemiform, and even the terminal flower pedicellate; lateral pedicels 2–3 mm. long; hypanthium turbinate, 1 mm. long; calyx 2–4 mm. across at post-anthesis, the lobes rounded-triangular, about 1 mm. long, ciliate; style (3–) 4 mm. long; petals 1.5 mm. long; stamens about 50, the anthers 0.2 mm. long. Fruit globose, about 6 mm. in diameter.—This plant is best known from eastern Amazonian Brazil to the Guianas and Trinidad. Similar and probably conspecific taxa occur in southeastern Brazil. The Ruiz collection, at Berlin, referred by Berg to a variety of the South-Brazilian *Aulomyrcia laruotteana*, has presumably been destroyed, but a specimen of "*Myrtus fragrans*" from Pavón's herbarium (G) agrees with his description of [var.] *peruviana*. It is less prominently glandular than most specimens of *A. multiflora*, but in other respects, including the distinctive raceme-like tips of the panicles, it agrees well with this species. The slightly compressed panicle-branches are found in other examples of *A. multiflora*, e.g. in *Gardner 1616*, the type of *A. sphaerocarpa* [var.] *complicata*. F.M. Neg. 19863; Univ. of Mich. Neg. 434.

Huánuco: Macora ["Macoxa"], *Ruiz*. Carpish Divide, 8,500 feet, *Sandeman 5216*.—Junín: Huacapistana, *Sandeman 4394*. Entre

Tarma y San Ramón, debajo de Huacapistana, 1,800–2,200 meters, *Ferreyra 11171, 11222, 11406*.—Río Acre: Near mouth of Rio Macauhan, *Krukoff 5581*. Trinidad to (probably) southeastern Brazil, and Bolivia. "Cocacoca" (Ruiz).

Myrcia myrtillifolia DC. Prodr. 3: 250. 1828. *Aulomyrcia myrtillifolia* (DC.) Berg, Linnaea 27: 36. 1855.

A small shrub to 1 meter high, nearly glabrous, the leaf-buds, young petioles and immature branchlets thinly strigose with reddish or yellowish hairs. Leaves small, broadly elliptic to obovate, 8–15 mm. wide, 9–27 mm. long, 1.5–2 times as long as wide; blades rounded, retuse, or blunt-pointed at tip, cuneate or somewhat rounded at base and attenuate to a ventrally grooved petiole 0.7 mm. thick by 4 mm. long; veins 10–15 principal pairs, the intermediate ones similar and parallel, in young leaves often forming a conspicuous pattern of parallel veins about 1 mm. apart, all veins nearly straight, not decreasing distally; marginal vein about equal to the laterals, sinuous, less than 1 mm. from margin; glandular dots apparent in young leaves, much less so at maturity; inflorescence axillary, 3–4 cm. long, mostly exceeding the leaves, once or twice compound; pedicels 4–7 mm. long; flowers usually 11 or fewer, glabrous except the strigose inner surface of the calyx-lobes; bracts and bracteoles 1–1.5 mm. long, lanceolate, deciduous as the flowers open; hypanthium turbinate, 1.5 mm. high in flower; calyx 3.5 mm. across in flower, the lobes 5, broadly rounded, finely ciliate, about 0.7 mm. long, 1.5 mm. wide; style 4 mm. long; anthers 0.3 mm. long; fruit globose, 5–6 mm. in diameter; ovary 3-locular.—This plant belongs to a species complex which seems to be absent from the lower Amazon Valley, but is well represented in southeastern Brazil from Bahia southward. The Klug specimen cited below appears to be a close match for the type of *Myrcia myrtillifolia* (Bahia, *Martius;* seen at M, 1954), and for authentic material of *Aulomyrcia buxifolia* var. *ovalis* Berg, *A. caerulescens* Berg, *A. obovata* Berg, and *A. ramulosa* (DC.) Berg. Of these species all except one are stated by Berg to have a bilocular ovary; the exception is *A. obovata*, which is described and illustrated (Mart. Fl. Bras. 14, pt. 1: 122. *pl. 19*. 1857) as having a trilocular ovary. The importance of this character in species differentiation is not sufficiently understood. F.M. Neg. 19825.

San Martín: Zepelacio, near Moyobamba, 1,200–1,600 meters, mountain forest, *Klug 3289*. Tarapoto, *Williams 5961, 5990*. Bolivia; southeastern Brazil.

Myrcia neesiana DC. Prodr. 3: 249. 1828. *Aulomyrcia neesiana* (DC.) Berg, Linnaea 27: 36. 1855. *A. holosericea* Berg, in Mart. Fl. Bras. 14, pt. 1: 99. 1857.

A tree, strigose to densely hirsutulous with stiff lustrous grayish- or yellowish-brown hairs up to 0.5 mm. long, these abundant on the branchlets, inflorescence, petiole, and hypanthium, and less abundant or sparse on the corolla and the lower surface of the leaves; leaves elliptic to ovate or obovate, 3.5–7 cm. wide, 12–21 cm. long, or smaller and narrower in the inflorescence, usually 2.7–3.4 times as long as wide, acuminate (often abruptly so), gradually narrowed to base where cuneate or abruptly rounded, the usually strigose-ciliate margin decurrent on the stout petiole 1–2.5 mm. thick, (4–) 6–10 mm. long; midvein sulcate and usually narrowly impressed above, stiff-hairy or nearly or quite glabrous, prominent beneath; lateral veins (10–) 15–20 pairs, flat or very minutely impressed above, prominent beneath; marginal vein about equaling the laterals, and somewhat arched between them, 1–3 mm. from margin (more strongly arched and often 5–7 mm. from margin in some Brazilian and Bolivian plants with broad leaves); leaves darkening in drying, the upper surface often nearly black, somewhat lustrous, nearly glabrous, the veins reddish, the glands usually not apparent; lower surface dark brown, very minutely siliceo-verruculose, sparingly strigose or hispidulous, with some dark glands; inflorescence an axillary or falsely terminal panicle up to 10–13 cm. long, rather regularly 2 to 3 times compound, the branches opposite or nearly so, strongly compressed, 1.5–3 mm. wide below the first node; flowers large, up to about 70; bracteoles scarious, darkening and deciduous before anthesis, ovate, pointed, up to 2.5 mm. long; buds nearly glabrous, 4–5 mm. long, the calyx and hypanthium together forming a hemisphere, which is truncated by the nearly straight margins of the lobes, which surround loosely the low globe of the petals; calyx-lobes much broader than long, 2.5–3 mm. wide, 1.3–1.5 mm. long, appressed-pubescent within, strongly imbricated, rounded at the sides, the distal margin very slightly curved and the lobe usually appearing truncate; disk 4 mm. wide, hairy, sunken, the cavity 2 mm. deep; style probably about 6 mm. long, glabrous except at base; stamens about 200, up to 6 mm. long, the anthers about 0.6 mm. long; petals probably subrotund, 4–5 mm. long; fruit subglobose, about 1 cm. in diameter.—This assemblage of Amazonian species, referred by Berg to *Aulomyrcia* because of the deeply sunken disk, is probably best regarded as a single species, characterized by the large, nearly globose and

densely strigose buds, the truncate calyx and the deeply sunken disk. The type of *Aulomyrcia holosericea*, and also a topotype, *Williams 4851*, are hirsutulous, with leaves mostly 15–20 cm. long, the lateral veins 15–20 pairs, the inflorescence 10–13 cm. long and up to 70-flowered. The type of *M. neesiana*, and also certain Peruvian and other Brazilian collections (e.g. *Tessmann 3472*), however, are thinly or closely strigose, the leaves shorter and broader, often 10–15 cm. long with 10–15 pairs of veins, the inflorescence 4–8 cm. long, with 30 flowers or as few as 9. Possibly these should be regarded as subspecifically, or even specifically different, but the many features which they have in common seem to preclude the adoption of such a classification, at least until better flowering and fruiting material is available. Rather numerous Bolivian collections made by Buchtien are here regarded as comprising a part of the inclusive *M. neesiana* also, although they are even more strongly hirsutulous than *A. holosericea*. F.M. Negs. 19826, 23327.

Loreto: Yurimaguas, *Poeppig 2217*, type of *A. holosericea; Williams 4851*. Stromgebiet des Ucayali von 10° S. bis zur Mündung, *Tessmann 3472*.

A specimen collected by Macbride at Hacienda Schunke, La Merced, Junín? (no. 5621) is perhaps an extraordinarily vigorous example of this species. The leaf-blades are 8–10 cm. wide, 15–22 cm. long, and the petioles 2.5–3.5 cm. long; the lower leaf-surfaces are strongly hirsute, and the veins are more prominent than in other collections of this species. The fruit, said to be red, is globose and up to about 1 cm. in diameter. This may represent an undescribed species, but the specimen has the aspect of a watersprout, and is said by the collector to be "branchless, about 6 feet high."

Myrcia obumbrans (Berg) McVaugh, Fieldiana Bot. 29: 193. 1956. *Rubachia obumbrans* Berg, in Mart. Fl. Bras. 14, pt. 1: 28. 1857. *Marlierea obumbrans* (Berg) Niedz. in Natürl. Pflanzenfam. III, pt. 7: 76. 1893.

A shrub or tree, the branchlets, vegetative buds, branches of the inflorescence and hypanthium densely silky-strigose with minute pale yellowish-white hairs, the longest up to 0.5 mm. long; bracts and upper surface of the leaves sparingly pubescent with similar hairs; leaves very large, sessile, broadly elliptic or ovate, 13–17 cm. wide, 25–32 cm. long, 1.7–2 times as long as wide, abruptly and about equally rounded to the narrow acumen 1–1.5 cm. long and to the cordate base; midvein impressed above, sulcate near base but ele-

vated in a narrow ridge near tip, prominent beneath; lateral veins 15–20 pairs, impressed above, prominent beneath; marginal vein about equaling the laterals and arched between them, 5–9 mm. from margin, with a weaker submarginal vein outside it; upper surface of blade darkening in drying, lustrous, reticulate with small raised veins, somewhat impressed-punctate; lower surface glabrous to minutely hispidulous, dull and pale, without apparent glands; stipuloid processes conspicuous, 3–4 mm. long; inflorescence a stout panicle, 3 to 4 times compound, up to 20 cm. long; flowers clustered in 3's near the tips of the branches, sessile; bracts leafy and conspicuous in the young inflorescence, deciduous at or before anthesis, the larger boat-shaped, obtuse, 8 mm. wide, 16 mm. long; bracteoles similar, elliptic, obtuse, about 1.7 mm. wide, 2–3 mm. long; opening buds 7 mm. long, narrowly obconic, the hypanthium about 8-ridged, the perianth folded nearly at right angles across the end; calyx-lobes broadly rounded, 5, hairy both sides, the larger 6 mm. wide, 3 mm. long; disk less than 3 mm. in diameter in bud, hirsute within and sunken 1.5 mm. in bud; style glabrous, or hairy at base, 12 mm. long (ex Berg); stamens about 200; petals five, 12 mm. long (ex Berg), fleshy in the bud, hairy on the outer surface.—F.M. Neg. 31508.

Loreto: Yurimaguas, *Killip & Smith 28180; Poeppig 2210*, type; *Williams 4581*.

Myrcia paivae Berg, in Mart. Fl. Bras. 14, pt. 1: 179. 1857. *M. frontinensis* Hieron. Bot. Jahrb. 20, Beibl. 49: 63. 1895.

A large shrub, or a tree up to 12 meters high, closely similar to *M. sylvatica*, but the leaves larger, usually cuneate and slender-petiolate at base; pubescence variable, like that of *M. sylvatica*, or of very short appressed hairs intermixed with longer appressed hairs, or mostly of longer and softer hairs, or almost none except on the hypanthium and vegetative buds; leaves lanceolate or ovate, or often elliptic and narrowed about equally to both ends; blades 2–4 cm. wide, 5.5–12 cm. long, often 2.5–3 times as long as wide, prominently and usually narrowly acuminate at apex, cuneate or sometimes rounded at base, the margins decurrent on the petiole which is (3.5–) 4–6 mm. long; upper surface of leaves with impressed glands, these sometimes inconspicuous in old leaves; venation more conspicuous than in *M. sylvatica*, but the lateral veins usually obscure above; inflorescence up to 8 cm. long, like that of *M. sylvatica* except for the variation in pubescence; disk about 1.5 mm. across, with depressed center; fruit apparently varying from nearly globose to ob-

long, 5–6 mm. broad, 6–8 mm. long, deep purple to black.—F.M. Neg. 19835.

San Martín: Zepelacio, near Moyobamba, *Klug 3267*. San Roque, *Williams 6983*.—Loreto: Lower Río Nanay, *Williams 621*. Iquitos, *Williams 7987; Killip & Smith 26982*. Venezuela (Isla de El Ratón, Amazonas), Colombia (Antioquia), Amazonian Brazil, Bolivia. "Orno pichana" (Williams).

A plant collected by Krukoff (no. 5582) near mouth of Rio Macauhan, Terr. Acre, Aug. 21, 1933 (US), suggests *M. paivae* by its leaf-shape and the presence of numerous, although hardly impressed, glands. The specimen, however, is almost completely glabrous and may represent an undescribed species, but additional material is needed.

In eastern Peru the species of *Myrcia* in this group are highly variable and scarcely separable. The pattern of variation suggests a history of complex hybridization and subsequent introgression. The original taxa appear to have been at least three, namely: (1) A species with short petioles, short slender inflorescence and small flowers, ample and more or less appressed pubescence, and lance-ovate leaves with evident venation but lacking impressed glands on the upper surface. This is *Myrcia splendens*. (2) A species like the first, with smaller leaves with impressed glands, but the venation scarcely or not at all apparent on the upper surface; pubescence ample but often minute and tending to be erect rather than appressed; leaves lanceolate. This is *Myrcia sylvatica*. (3) A coarser species with longer petioles, larger flowers, larger and more compressed inflorescence, sparingly or not at all pubescent, the often elliptic rather than lanceolate or ovate leaves rather prominently veined but without impressed glands. This is *Myrcia fallax*.

All three of the above species occur in the Guianas. Two of them, *sylvatica* and *fallax*, are well known farther south in Brazil, and through most of the Amazon Basin. The third species, *splendens*, as far as I am aware, does not range far southward in eastern South America; it is well known in the West Indies and apparently ranges southward along the lowlands east of the Andes as far as Bolivia. Plants which I cannot distinguish from West Indian specimens occur in Peru and Bolivia, and a related but small-leaved and rather heavily strigose taxon (*Myrcia saxicola*) is found in Peru and Ecuador. Similar, often abundantly pubescent plants are found at various localities in Ecuador, Colombia and Venezuela.

In eastern Peru and Bolivia and adjacent Brazil, and as far north and east as Antioquia, Colombia, and central Venezuela (Isla de El Ratón), there is a so-called species, *Myrcia paivae* Berg, which has the long petioles and leaf-shape of *M. fallax* but the inconspicuous veins, the impressed glands and the small, slender and finely pubescent inflorescence of *M. sylvatica*.

Similar intermediate forms occur in Peru, Colombia and Venezuela. These have mostly lance-ovate leaves with inconspicuous veins, impressed glands, and short petioles. The specimens suggest a condition intermediate between *M. splendens* and *M. sylvatica*.

Finally may be mentioned a series of specimens from northern Bolivia. These have the aspect of *M. paivae* but lack the impressed glands on the leaves and have relatively prominent veins. These specimens suggest intermediates between *fallax* and a plant like *paivae*.

Peruvian specimens of *paivae*, although consistently slender-petiolate, vary in leaf-shape from elliptic or elliptic-lanceolate with long-tapering base (as in the type of the species), to nearly ovate with somewhat rounded base. Variation of this kind can be explained, if the hybrid origin of *M. paivae* be indeed a fact, on the basis of the presence of varying numbers of genes derived from the *sylvatica* ancestor. There appears also to be a correlation between leaf-shape and opacity, i.e. leaves which tend toward a lanceolate or ovate shape tend also to have the lateral veins less apparent on the upper surface; this last correlation is highly subjective, however, and is based upon small numbers of specimens.

Myrcia pentagona McVaugh, Fieldiana Bot. 29: 193. 1956.

Tree 5 meters high, the branchlets, buds, inflorescence and especially the hypanthium whitened with straight soft appressed hairs up to 0.5 mm. long, these often collapsing and matted together in drying, to give a felted appearance; leaves elliptic, 5–7.5 cm. wide, 20–30 cm. long, 3–4 times as long as wide, gradually or abruptly acuminate, rounded to the base but the margins strongly inrolled for 1–5 cm. above the base (making the leaf appear subcuneate at base) and somewhat prolonged and decurrent on the stout, deeply channeled petiole 1.5–2 mm. thick, 6–8 mm. long; prolonged basal margins raised above the general surface, appearing as two auricles or as the ends of two tubes formed by the inrolled portions; midvein sulcate above, elevated beneath more than its diameter; lateral veins impressed above and prominulous beneath, with 18–25 pairs much

stronger than the intermediates, the marginal vein about equaling the laterals, nearly straight, 2–3 mm. from the margin; upper surface dark green or brown and lustrous, nearly glabrous, smooth, with minutely reticulate vein-pattern, the lower surface obscurely verruculose, sparingly appressed-pubescent, pale brown; glands not apparent on either surface; inflorescence a stout axillary or falsely terminal many-flowered panicle 12–15 cm. long and about as wide, irregularly 3 times compound, the principal branches opposite and much flattened, the peduncle 2–4 cm. long, up to 4 mm. wide below the first node; flowers aggregated toward the tips of the branches, sessile and often alternate along the somewhat 4-angled ultimate branchlets, or in triads at the tips; bracts and bracteoles scarious, dark, deciduous before anthesis, the bracteoles ovate, acute, up to 2 mm. long; buds 3.5–4.5 mm. long, the hypanthium obconic, when dry with 5 prominent ridges opposite the calyx-lobes, the latter rounded or bluntly (or in the outer acutely) triangular, unequal, hairy inside, 1.5–2 mm. wide, 1–1.5 mm. long; disk 3–4 mm. wide, hairy, deeply sunken; style 6–7 mm. long, hairy more than half its length; stamens up to 8 mm. long, about as long as the style, about 150, the anthers 0.5 mm. long; petals white, ovate to suborbicular, about 3.5–4 mm. long, hairy outside.—Univ. of Mich. Neg. 487.

Loreto: Florida, Río Putumayo, mouth of Río Zubineta, alt. 180 meters, forest, May–July, 1931, *G. Klug 2152* (type, F). "Choy-ey" (Huitoto, Klug).

Myrcia pertusa DC. Prodr. 3: 251. 1828. *Aulomyrcia pertusa* (DC.) Berg, Linnaea 27: 47. 1855.

A small tree to 4 meters high, pubescent in the inflorescence and on the principal veins of the lower leaf-surface with sharp slender yellowish-white hairs up to 0.5 mm. long, these thickly aggregated and appressed on the vegetative buds and on the narrow base of the hypanthium; leaves lanceolate, elliptic or obovate, 2.5–6.5 cm. wide, 7–17 cm. long, usually nearly 3 times as long as wide, acuminate, the base rounded or subcordate, its margins produced and raised or undulate at the junction with the flattened petiole 2 mm. long and nearly as wide; stipular processes 1.5 mm. long, conspicuous; midvein strongly impressed above or nearly flat near base, prominent beneath and elevated about its own thickness; lateral veins 15–20 pairs, impressed above, prominent beneath; marginal vein similar to laterals but often stronger, 1–3 mm. from margin; blades lustrous and polished above, green, with 5–8 large raised glandular dots per

square mm.; lower surface green, dull, the glandular dots inconspicuous; inflorescence a broad axillary panicle 8–10 cm. long and almost as wide, irregularly 3 times compound, many-flowered, the branches opposite or subopposite, compressed, 2–2.5 mm. wide below the first node; flowers aggregated near the tips of the branches, sessile but with a narrow pseudostalk 1–1.5 mm. long, this densely hairy, abruptly expanded into the broadly funnelform, nearly glabrous hypanthium; buds about 3 mm. long; bracts and bracteoles linear or lanceolate and up to 5 mm. long or more (in the type-collection), deciduous before full anthesis; calyx-lobes broadly rounded, 2 mm. wide, 1.5 mm. long, ciliate, strigose without, glabrous within, strongly gland-dotted; disk about 2 mm. wide, hairy, sunken; style 4.5 mm. long, hairy near base; stamens 250–300, about 6 mm. long; petals suborbicular, about 2.5 mm. long and wide; fruit not known.—F.M. Neg. 19839.

Loreto: Florida, at mouth of Río Zubineta, *Klug 2065*. Amazonian Brazil, the type from Ega.

Myrcia poeppigiana Berg, in Mart. Fl. Bras. 14, pt. 1: 157. 1857.

A slender shrub up to 3 meters high, or possibly vine-like, hirsute with lustrous brownish-yellow erect or flexuous hairs up to 1.5 mm. long; leaves elliptic or lanceolate, (1.5–) 2.5–3.5 cm. wide, (4–) 6–11 cm. long, often 3 times as long as wide, bluntly pointed or acuminate, the upper surface dark and glabrous except the impressed and closely fine-hairy midvein; blade nearly sessile, rounded at base, the dark petiole about 1 mm. thick, 3–5 mm. long, abruptly contracted at summit into the midvein, about half its length under the basal portion of the blade; lateral veins 7–12 pairs, impressed above in age, raised and evident beneath; marginal vein diminishing from vein to vein toward apex of leaf, 1–2 mm. from margin between veins, 2–4 mm. at junction with veins; blades not visibly gland-dotted by reflected light; stipuloid processes 1.5–2 mm. long; inflorescence 3–6 (–10) cm. long, slender, axillary, 7- to 10- (20-) flowered, the axis 1 mm. or less in diameter, terete; pedicels 3–5 mm. long; bracts and bracteoles unknown, probably deciduous as the inflorescence expands; corolla and stamens unknown; calyx-lobes 5, equal, broadly rounded, about 1.7 mm. wide, 1 mm. long, glabrous or silky-strigose on the inner surface; hypanthium densely appressed-hirsute; disk densely short-hirsute, apparently flat or nearly so, about 2.5 mm. across; style 6 mm. long, hairy half its length; fruit oblong, 6–7 mm.

thick, 8–9 mm. long.—First collected at Ega, Brazil, in 1831, by Poeppig (no. 2577). A recent collection is Krukoff's no. 6995 from the upper Rio Madeira, Amazonas, Brazil. The general morphology of this species seems to suggest its close relationships to *M. bracteata* and *M. huallagae*, from both of which it is readily distinguished by the slender bractless inflorescence. F.M. Neg. 23463.

Peru (probably). Amazonian Brazil.

Myrcia salicifolia DC. Prodr. 3: 246. 1828. *Aulomyrcia salicifolia* (DC.) Berg, Linnaea 27: 78. 1855.

A shrub or small tree to 10 meters high, nearly glabrous, or the young shoots, leaf-buds and ventral surface of the petiole strigose with reddish or dark brown hairs; leaves narrowly elliptic or oblanceolate, 5–12 mm. wide, 2.5–7 cm. long, (3–) 5–6 (–9) times as long as wide, tapering to a slender blunt tip (or in oblanceolate leaves the tip rounded), attenuate to a short petiolar base 2–3 mm. long; midvein convex above and below, about equally prominent on the two surfaces; lateral veins inconspicuous, 10–12 pairs, the smaller veins reticulate; marginal vein nearly straight, inconspicuous, about 1 mm. from margin; blades smooth and lustrous above, paler beneath, gland-dotted on both sides; inflorescence glabrous, 2–6 cm. long, 1- to 7-flowered, bearing in addition to the terminal flower 1–3 pairs of slender divaricate 1-flowered branches 5–15 mm. long; peduncle 1.5–2 cm. long, 0.5 mm. thick; bracts linear, glabrous, 3–5 mm. long, deciduous at or before anthesis; bracteoles similar, 1.5 mm. long; buds 3–4 mm. long, turbinate or obovoid, the hypanthium 1–1.5 mm. long; calyx-lobes 4 (less often 5), broadly rounded, up to 1 mm. long and 1.8 mm. wide, thickly pubescent on the inner surface (and sometimes in the sinuses on the outer surface) with very short flaccid ochraceous broad-based hairs; hypanthium glabrous within, prolonged about 1 mm. beyond the summit of the ovary, the orifice 2–3 mm. across; style 4 mm. long; stamens about 50, about as long as the style; petals white, about 2 mm. wide, 3 mm. long; fruit glabrous, apparently black, globose, pyriform, or oblate, 7–10 mm. across, 7–12 mm. high; seeds about 3, lunate, 6 mm. long.—A distinctive species, well known from recent collections on the Río Apaporis as well as from older collections on the Río Vaupés; occurs also as near to the borders of Peru as the Río Caquetá, Colombia (*Schultes & Cabrera 16364*), and the Rio Japurá, Brazil (*Martius*). F.M. Neg. 19857.

Peru (probably). Amazonian Brazil and Colombia.

Myrcia splendens (Sw.) DC. Prodr. 3: 244. 1828.[1] *Myrtus splendens* Sw. Prodr. 79. 1788. *Myrcia sororia* DC. l.c. 243. *M. saxicola* Berg, Linnaea 27: 92. 1855. *M. sericea* Berg, l.c. 114. (?)*M. saxicola* β *grandifolia* Berg, Linnaea 29: 219. 1858. *M. brachylopadia* Diels, Bot. Jahrb. 37: 595. 1906. *M. lamprosericea* Diels, l.c. 596. *M. coroicensis* Rusby, Bull. N. Y. Bot. Gard. 4: 354. 1907.

1. **Myrcia splendens** (Sw.) DC., var. **splendens.**

A shrub or small tree up to 5–6 meters high, abundantly pubescent with lustrous yellowish- or brownish-white hairs up to 1 mm. long on the leaves, 0.5 mm. long in the inflorescence; hairs appressed or strongly ascending, the hypanthium, inflorescence-branches and dorsal surface of the midvein closely silky-strigose or somewhat shaggy; calyx-lobes and dorsal (lower) leaf-surface sparingly or closely strigose; leaves subsessile, ovate, ovate-lanceolate or sometimes elliptic, (1–) 2–3 (–4) cm. wide, (2–) 5–7 (–11) cm. long, 2–3 times as long as wide; blades abruptly narrowed at tip to a blunt point or, usually, broadly or narrowly acuminate; base of blade rounded and often somewhat cordate-auriculate; petiole stout, ventrally grooved, about 1 mm. thick and up to 3 (–4) mm. long; surface features and venation of blades as in *M. fallax* except that the midvein bears a line of stiff, often erect hairs most of its length on the upper surface; marginal vein usually less than 1 mm. from margin; inflorescence axillary and subterminal, 2–4 (–6) cm. long, with up to 50 flowers (usually fewer), 3 times compound, the branches opposite or nearly so, terete or but slightly flattened below the nodes (1–1.5 mm. wide below the first node); flowers aggregated toward the tips of the branches; buds 2.2–2.5 mm. long before anthesis, the hypanthium narrowly turbinate; calyx-lobes 5, drying dark, glabrous on the inner surface, bluntly deltoid or broadly rounded, 1–1.2 mm. long, about 1.5 mm. wide, often reflexed in post-anthesis; disk about 2 mm. wide, densely hairy, the center slightly or markedly depressed; style 3.5–4.5 mm. long, hairy near base or below the middle; petals

[1] This has long been the accepted name for this species. According to Kuntze, however, Swartz himself recognized the priority of Jacquin's *Collectanea ad Botanicam... spectantia* (vol. 2, 1788) over Swartz' *Prodromus*, in which the name *Myrtus splendens* was published (Kuntze, Rev. Gen. 1: cxxxi, cxliv. 1891). *Eugenia periplocifolia* Jacq. (Coll. 2: 108. *t.4.* 1788), according to DeCandolle (Prodr. 3: 244. 1828), Berg (Linnaea 27: 105. 1855) and Urban (Bot. Jahrb. 19: 583. 1895), is identical with *Myrtus splendens* Swartz; if such actually be the case, Jacquin's name, being the earlier, is to be transferred to *Myrcia* to replace *Myrcia splendens* (Sw.) DC. I have not been able to form any conclusions as to the identity of *Eugenia periplocifolia*, and prefer not to make the necessary new combination.

white, about 2 mm. long; stamens white, about 75–85, 3–3.5 mm. long; fruit oblong, about 6 mm. thick, 7–8 mm. long.—Closely simulating *M. fallax*, but smaller in most of its parts than that species, from which it is distinguished by the abundant appressed pubescence, which often has a grayish appearance, shorter petioles, more ovate leaves, and short slender inflorescence in which the branches are hardly or not at all flattened. F.M. Negs. 23469, 31461, 33486; U. S. Nat. Herb. Negs. 4463, 4468.

I am quite unable to find any morphological distinction between typical West Indian material of this species, and some of the Peruvian specimens cited below (e.g. *Klug 702*, *Klug 3346*). Much of the Peruvian material, however, and some from southern Ecuador, is of the type exemplified by Poeppig's no. 1755 (the type of *Myrcia saxicola*), and Weberbauer's no. 4508 (the type of *M. lamprosericea*). These have the leaves small (often 4 cm. long or less) and relatively broad; the silky-strigose pubescence covers the inflorescence branches so abundantly as to give them often a shaggy appearance; the hairs also extend in abundance to the lower surfaces of the leaves and to the hypanthium and calyx-lobes.

An extreme in which the long and abundant silky pubescence covers the young growth and the young leaves is *M. sericea* Berg (Poeppig's no. 1675). The type is in very young bud, but as far as can be ascertained it differs from *M. splendens* only by the appressed pale hairs. Of this same general description is *M. coroicensis* Rusby (*Bang 2276*). An even more remarkable extreme, in which the lustrous, silky reddish-yellow hairs are longer than the calyx-lobes, is var. *chrysocoma* (see below).

In contrast to the small-leaved specimens of the *saxicola-lamprosericea* type, may be cited certain collections made by Klug (nos. 2181, 2342) at Florida. These seem to represent extraordinarily vigorous individuals, which differ from ordinary *splendens* in having elliptic leaves 4.5–6.5 cm. wide and 12–16 cm. long, and a much-branched inflorescence up to 15 cm. long.

A doubtful specimen, which may represent an undescribed species, was collected near the mouth of Rio Macauhan, Río Acre, by Krukoff (no. 5582). The inflorescence is very slender and relatively few-flowered, the disk is 2.5 mm. wide, and the whole plant is glabrous except the hypanthium and disk, the calyx-lobes (both sides), and the petals.

San Martín: Zepelacio, near Moyobamba, *Klug 3346*. Province of Moyobamba, *Mathews*. Moyobamba, 800–900 meters, *Weber-*

bauer 4508, isotype of *M. lamprosericea* (herb. USM). Tarapoto, *Williams 5434, 5789, 5804, 5872, 6089, 6283, 6296, 6413, 6429*. San Roque, *Williams 7685*.—Loreto: Mishuyacu, near Iquitos, *Klug 702*. Florida, *Klug 2182, 2342*. Manfinfa, upper Río Nanay, *Williams 1146*. Tierra Doble, Río Nanay, *Williams 908*. Iquitos, *Killip & Smith 27034; Tessmann 3604, 5337; Williams 8038*.—Huánuco: Pampayacu, *Kanehira 15*. Muña, about 7,000 feet, *3924*. Cuchero, *Poeppig 1675* [=*Poeppig 58*, =*Poeppig 143*], type of *M. sericea*. Rupes ad Cassapi, *Poeppig 1755*, type of *M. saxicola*. Cassapi, *Mathews 1958*. Monzón, 2,000–2,500 meters, *Weberbauer 3526* (herb. USM).—Junín: Huacapistana between Tarma and San Ramón, *Ferreyra 273*. Near Huacapistana, *Weberbauer 2100*, isotype of *M. brachylopadia* (herb. USM).—Ayacucho: Ccarrapa, *Killip & Smith 22474*. Aina, *Killip & Smith 22530*.—Cuzco: Choquellohuanca(?), *Vargas C. 8187*. Marcapata Valley between Chaupichaca and Tío, 1,900 meters, *Weberbauer 7853*. Callanga, *Woytkowski 389*.—Locality uncertain: Corapacho, *Ruiz & Pavón*, lectotype of *M. acuminata δ peruviana* (herb. F, G). "Puchcu-huaiu," "Pampa-Orégano," "Vicho caspi" (Williams); "Choi-ey" (Huitoto language, Klug); "Ucucha-huasi" (Williams). Bolivia to the West Indies.

2. **Myrcia splendens** (Sw.) DC., var. **chrysocoma** McVaugh, Fieldiana Bot. 29: 193. 1956.

A tree, with the general aspect of *Myrcia splendens* var. *splendens*, but hirsute, the pubescence dense, consisting of appressed or ascending, lustrous, silky, reddish yellow or yellowish hairs up to 1 mm. long or a little more, the hairs surpassing the calyx-lobes.—Univ. of Mich. Neg. 457.

San Martín: Pongo de Cainarachi, Río Cainarachi, alt. 230 meters, in forest, Sept.–Oct., 1932, *Klug 2622* (type, US).

Myrcia subglabra McVaugh, Fieldiana Bot. 29: 194. 1956.

A tree 6 meters high, with strongly flattened branchlets, nearly completely glabrous except that the petals are hairy outside and the vegetative buds are densely appressed pubescent with straight lustrous yellowish white hairs up to 0.5 mm. long; leaves elliptic-lanceolate or narrowly ovate, 2–6 cm. wide, 8–20 cm. long, variable on each plant, 2.4–4 times as long as wide, gradually acuminate and often attenuate at tip, rounded toward base and at very base usually cuneate, the margins long-decurrent on the petiole up to 1.5 mm. thick, 5–8 mm. long; midvein impressed above except near tip, pubescent

except near base, prominent beneath; lateral veins 15–18 pairs, somewhat elevated above in drying, prominulous beneath, the parallel intermediate veins less conspicuous than small irregular transverse veins which produce an angular reticulate pattern on both surfaces; marginal vein about equaling the laterals, strongly arched between them, 1–6 mm. from margin, with a weaker submarginal vein outside it; leaves in drying nearly concolorous, green or light brown, both surfaces lustrous and bearing elevated large dark circular glands, these up to 0.3 mm. wide, 1–2 per square mm.; inflorescence a many-flowered broad panicle, 3 to 4 times compound, the branches opposite or subopposite, flattened, the axis about 2 mm. wide below the first node; flowers mostly pedicellate, solitary or in 3's near the tips of the branches; bracts and bracteoles deciduous at anthesis, the former foliaceous, elliptic, less than 1 cm. long, the bracteoles linear, acute, ciliate, 1–1.5 mm. long; buds 3–4 mm. long, subglobose even when young, the hypanthium completely glabrous or with a very few hairs on the narrow pseudostalk which is 1 mm. long or less; calyx-lobes broadly rounded, 1.5–2 mm. wide, 1–1.3 mm. long, ciliate but glabrous on both surfaces; disk 2.5–3 mm. wide, deeply sunken, white-hairy; style 6–7 mm. long, hairy at base only; stamens about 200, the longest about equaling the style; anthers 0.6 mm. long; petals probably obovate, 4 mm. long, hairy outside; fruit ellipsoid-oblong, 5–7 mm. in diameter, about 1 cm. long, the hypanthium prolonged into a cylindrical neck 3–4 mm. thick, 2 mm. long.—One of the most distinctive species of *Myrcia*, thus far known only from the Mapiri region of northern Bolivia, where collected several times in the subtropical forested areas, at elevations of 570–850 meters.

Peru (probably). Bolivia.

Myrcia sylvatica[1] (Mey.) DC. Prodr. 3: 244. 1828. *Myrtus sylvaticus* Mey. Prim. Fl. Esseq. 191. 1818. *Myrcia ambigua* DC. l.c. 252. *M. ambigua* α *dives* and β *multiflora* Berg, in Mart. Fl. Bras. 14, pt. 1: 180. 1857.

A shrub or small tree up to 4 (–6) meters high, finely pubescent on the inflorescence and young growth; hairs of two types, the inflorescence and vegetative branchlets densely hispidulous with minute upright or ascending hairs about 0.1 mm. long, and beset also, especially at nodes and on the hypanthium, with appressed lustrous

[1] The name of this species is probably a later synonym of *Myrtus lucida* L. Syst. Nat. ed. 10: 1056. 1759. The type, which I examined in the Linnaean Herbarium in 1954 (Specimen no. 637–9), resembles *M. sylvatica* closely except that the leaves are not noticeably impressed-puncticulate.

yellowish white hairs up to more than 0.5 mm. long; leaves lanceolate to narrowly ovate, 1–2 (–2.8) cm. wide, 4.5–7 cm. long, 2.5–3.5 (–5) times as long as wide, strigose beneath especially on the prominent midvein; blades prominently and often narrowly acuminate, blunt at very tip, rounded at base; petiole stout, often twisted, more than 0.5 mm. thick, 2–2.5 (–3) mm. long; upper surface of blade bright green and lustrous, abundantly impressed-dotted, the midvein impressed, the lateral veins scarcely or not apparent when dry; lower surface dull and paler, the lateral veins inconspicuous, about 15 pairs sometimes slightly raised, or these about equaling intermediate veins and the leaf having up to 40 parallel lateral veins on each side; small veins between the laterals inconspicuous, the venation thus not appearing reticulate; marginal vein about equaling the laterals, and arched slightly between the larger ones, about 0.5 mm. from margin; inflorescence axillary or subterminal, up to 6 cm. long, 3 to 4 times compound, the branches opposite or subopposite, terete or nearly so, the axis less than 1 mm. in diameter below the first node, the flowers aggregated in 3's near the tips of the branches; buds 1.5–2 mm. long just before anthesis, the hypanthium narrowly turbinate; calyx-lobes 5, drying dark, strigose without, glabrous within, bluntly triangular, about 0.5 mm. long and a little more in width, mostly erect in post-anthesis and in fruit; disk 1–1.5 mm. wide, densely hairy, the middle slightly depressed; style 2.5–3.5 (–4) mm. long, hairy at base; petals white, about 1.5 mm. long; stamens about 50–75, 2.5–3.5 mm. long; fruit oblong, black, 3.5–4 mm. thick, 5–6 mm. long.—The Peruvian specimens cited below have lanceolate leaves which are considerably larger than usual in this species (2–2.5 cm. wide, 5.5–9.5 cm. long, the petioles often 4 mm. long). The inflorescence is often 4 times compound and somewhat more silky than usual, and the buds may be 2–2.5 mm. long. These variations may be related to the presence of other species in eastern Peru (see discussion under *Myrcia paivae*).

Loreto: Iquitos, *Killip & Smith 27044*. Mishuyacu, near Iquitos, *Klug 106, 453, 540, 563, 565*. Bolivia and Amazonian Brazil to the Guianas.

Narrow-leaved extremes are: Loreto: Lower Río Nanay, *Williams 656*.—San Martín: Tarapoto, *Williams 6003*.

Myrcia yungasensis Rusby, Mem. Torr. Bot. Club 3, pt. 3: 27. 1893. *Aulomyrcia poeppigiana* Berg, in Mart. Fl. Bras. 14, pt. 1: 123. 1857, not *Myrcia poeppigiana* Berg, 1857.

A shrub or small tree, nearly glabrous, the antrorsely appressed short rufous pubescence dense on bracts, buds and very young leaves, a few hairs persisting at leaf-maturity on the petiole and the midvein; leaves elliptic, 2–4 cm. wide, 4.5–8.5 cm. long, often twice as long as wide; blades narrowed about equally to both ends, the tip blunt or rounded or with a broad blunt acumen, the base rounded to obtuse or sometimes cuneate; petiole stout, 3–5 mm. long, 1–1.5 mm. thick; midvein flat or convex above, or sulcate near base; lateral veins 15–20 pairs; marginal vein about equaling the laterals and little arched between them, 1–1.5 (–2) mm. from margin; glandular dots apparent on lower surface, scarcely so on upper; inflorescence axillary or falsely terminal, 5–11 cm. long, often about equaling the leaves, 2 or 3 (rarely 4) times compound, the branches opposite to subopposite or irregularly alternate, the whole often more or less irregularly flowered by abortion and reduced to a series of racemelike branches; flowers sessile, but the fruit often appearing to terminate pedicels 2–5 mm. long (two flowers of the ultimate dichasium having aborted); flowers glabrous except the glistening-strigose inner surface of the calyx-lobes; hypanthium 2–2.5 (–3.5) mm. long in bud, turbinate, the rim prolonged about 1 mm. above the ovary in postanthesis; calyx-lobes 5, rounded, slightly unequal, about 1 mm. long, 1.5–2 mm. wide; style 4 mm. long, deciduous shortly after stamens and corolla; stamens 100–200, in about 3 rows; fruit globose, about 4 mm. in diameter.—This is the Peruvian representative of a species complex which is well represented in Amazonian Brazil and which extends into Colombia and the Guianas. The Amazonian species which appear to belong to this complex are listed above, in the synonymy of *Myrcia amazonica*. Apparently *Aulomyrcia uaupensis* Berg, from the Río Vaupés, also belongs to this alliance, and *A. inaequiloba* (DC.) Amsh. (*A. pirarensis* Berg), of the Guianas, is very closely similar. Plants from Amazonian Brazil (i.e. *Myrcia amazonica* as understood in the present *Flora*) may ordinarily be distinguished from *M. yungasensis* by the leaves, which blacken in drying and which may be somewhat prominently acuminate. The inflorescence in *M. amazonica* usually seems rather more slender than in *M. yungasensis*, and is often markedly rufous-pubescent. The flowers in the Peruvian plant are slightly larger than in most specimens from the lower Amazon. These differences are perhaps inconsequential, but as they seem to be rather consistently correlated with geographical distribution the present species may well be maintained pending a general revision of the whole *amazonica* complex. F.M. Neg. 23337 (not type, which is Poeppig's no. 2834).

San Martín: Tarapoto, *Williams 5613, 5870, 6111, 6297, 6320, 6329, 6667.*—Loreto: Yurimaguas, *Williams 3840, 4543, 7826.* Río Acre: Seringal Auristella, *Ule 9654.* Amazonian Brazil; Bolivia. A specimen from Mishuyacu, *Klug 446,* is slightly more pubescent and has some much larger and acuminate leaves up to 6 cm. wide, 15 cm. long, and style 8 mm. long, but seems otherwise indistinguishable.

DOUBTFUL SPECIES

Myrcia elattophylla Diels, Bot. Jahrb. 37: 595. 1906. Peru: ad viam a Sandia ad Chunchusmayo ducentem inter Ichubamba et Yumcacoya, in fruticetis 1800–2600 m.s.m., flor. m. Jun. 1902, *Weberbauer 1101* (herb. Berol., type). Not seen; I have not been able to find a specimen of this number, nor of the type numbers of *M. heliandina* and *M. stenocymbia,* at any herbarium in the United States. In 1954 I searched for these specimens without success at Geneva, Kew, Paris and Munich. Dr. Ferreyra, at my request, searched for them but equally without success, among the Weberbauer collections at Lima.

The description of *M. elattophylla* suggests a species related to *M. splendens, M. mollis,* or *M. ambivalens.*

Myrcia heliandina Diels, l.c. 594. Peru: Dep. Amazonas a Chachapoyas orientem versus pr. Molinopampa in sclerophylletis cum arboribus parvis tum fruticibus variis compositis 2000–2300 m.s.m., flor. m. Jul., 1904, *Weberbauer 4338* (herb. Berol., type). Not seen; see note above. Compared by Diels with *M. acuminata* (*M. fallax*).

Myrcia stenocymbia Diels, l.c. 596. Peru: Dep. Junín, prov. Tarma in valle Chanchamayo pr. La Merced in silvis apertis, 1000 m.s.m., flor. Decemb. 1902, *Weberbauer 1884* (herb. Berol., type). Not seen; see note above. Compared tentatively by Diels with *M. poeppigiana.*

Subtribe **EUGENIINAE** Berg

Trees or shrubs, with the flowers in Peruvian species solitary, or in dichasia or racemes (the latter including species with "glomerate" or "subumbellate" flowers). Calyx-lobes usually 4 and distinct. Cotyledons large, fleshy and plano-convex, or the embryo undivided and appearing monocotyledonous. Radicle very short or up to about one-half the length of the cotyledons, or in the species with undivided embryo not discernible in the seed. Ovary 2 (–3) -locular, the ovules in each locule numerous, or 2 and collateral, affixed to the central axis.

4. EUGENIA L.

Reference: Berg, Linnaea 27: 140–306. 1856; and in Mart. Fl. Bras. 14, pt. 1: 214–326. 1857.

Calyx-lobes 4, distinct and imbricated in bud and in anthesis, and usually persistent on the fruit (in some species loosely coherent below the tips until anthesis). Hypanthium little or not at all prolonged beyond the summit of the ovary. Petals as many as the calyx-lobes, usually conspicuous. Ovary usually bilocular, the ovules numerous (or as few as 3) in each locule, usually in a subcapitate group attached near the middle of the central dissepiment. Seeds one or two, the ovary as far as known undivided, pseudomonocotyledonous, the separate structures of cotyledon, radicle and plumule not discernible. Inflorescence fundamentally a raceme, i.e. the branches (in *E. stipitata*) or individual flowers (in all other Peruvian species) in decussate pairs; terminal flower of the axis usually wanting; axis sometimes extremely shortened, the flowers then appearing as if in axillary fascicles, umbels or glomerules; flowers, if occasionally solitary, arising from the basal bracteate nodes of new branches which are leafy above, or from the bracteate nodes of abortive axillary buds; bracteoles at base of flower often broad and persistent, sometimes connate.

One of the very large genera of flowering plants; the American species, according to an estimate made by Berg in 1859, number 537. The actual number is probably considerably smaller than this: according to Bentham the whole genus includes no more than about 500 good species. According to Merrill and Perry (Mem. Am. Acad. 18, pt. 3: 136. 1939) about 2500 species in the New and the Old World have been described in, or transferred to, *Eugenia*. The limits of the inclusive genus *Eugenia* have been the subject of much controversy. Many modern authors prefer to segregate the very numerous species of southeastern Asia as a distinct genus, *Syzygium* Gaertn. American authors generally have been reluctant to recognize all the segregate genera described by Berg, e.g. *Stenocalyx*, *Phyllocalyx*, *Siphoneugena*, and *Myrciaria*.

Plinia L., which was not recognized by 19th and 20th century authors before the work of Urban (Repert. Sp. Nov. 15: 412–413. 1919), appears to be a distinct taxon, as do *Myrciaria* Berg and *Myrcianthes* Berg.

Leaves ternate, or opposite at some nodes, 2 cm. long or less; flowers solitary, axillary; Cajamarca, north to Colombia.

(see *E. triquetra*, under *Myrcianthes*, p. 774)

Leaves opposite, or occasionally subopposite.

Flowers large, 7–8 cm. across the spreading stamens, the style 3.5–4 cm. long; inflorescence a stout terminal raceme with 2–4 pairs of flowers; plant glabrous, with long, tapering leaves, mostly in cultivation..... *E. jambos*

Flowers much smaller, the style 1.5 cm. long or less, the stamens about as long as the style or shorter; inflorescence axillary or falsely terminal; plants various, at least the inflorescence usually pubescent.

Racemes irregularly compound, the individual branches cymosely 3- (or rarely 7-) flowered or 1-flowered; hypanthium on a slender stipe (pseudostalk) often longer than itself, the linear deciduous bracteoles thus well below the flower, and the central flower of the cymose clusters apparently pedicellate..... *E. stipitata*

Leaves ovate or broadly elliptic, 5–6 cm. wide, 1.8–2.3 times as long as wide; veins impressed above, the lower leaf-surface thickly covered with erect acute hairs up to 0.5 mm. long; pedicels usually bibracteolate about the middle or below; style 7–8.5 mm. long, glabrous; calyx-lobes 4–5 mm. long..... *E. stipitata* subsp. *stipitata*

Leaves elliptic, 2.5–4.5 cm. wide, 2.2–3.3 times as long as wide; veins scarcely apparent above, not impressed; lower leaf-surface glabrous at maturity, or hispidulous on the veins, or covered with minute hairs 0.1 mm. long; pedicels bibracteolate 3–5 mm. below the hypanthium; style 5–6.5 mm. long, pilose at base; calyx-lobes 2.5–3 mm. long. *E. stipitata* subsp. *sororia*

Racemes simple, the primary branches (pedicels) 1-flowered; rarely the racemes racemosely compound, or with 2–3 flowers arising together from a node of the axis, or with 1–2 additional, subordinate racemes arising from the lowest nodes of the primary one; hypanthium not slender-stipitate, the bracteoles close to and often surrounding the base of the flower..... Key A

A (See also second A, p. 671). Axis of the raceme relatively slender and elongate, 3–5 cm. long or more; if shorter, then the internodes much longer than the diameter of the axis and some or all of them 5 mm. long or more.

Axis of the raceme 1.5 cm. long or less, the ascending slender pedicels often as long as, or longer than, the axis; inflorescence appressed-strigose or -silky.

Calyx-lobes 2.5 mm. long or less, not foliaceous; leaves less than 10 cm. long, impressed-punctate above, the lateral veins not at all or scarcely apparent.

Leaves acuminate and prominently mucronate, very variable in size and shape, the blades usually lanceolate but varying from ovate to linear. . . . . *E. biflora*

Leaves cuneate-obovate, 4 cm. long or less, rounded or bluntly pointed at apex. . . . . *E. inundata*

Calyx-lobes 7–16 mm. long, foliaceous; leaves 9–18 cm. long, not impressed-punctate, normally veiny. . . . . *E. macrocalyx*

Axis of the raceme 2 cm. long or more or, if shorter, the pedicels 4–7 mm. long, widely spreading and much shorter than the axis; pubescence and foliage various, the leaves neither mucronate nor small, and obovate-cuneate.

Hypanthium glabrous without, the plants nearly glabrous, usually finely pubescent in the inflorescence; small-flowered species with slender, loosely flowered racemes.

Lateral veins of the leaves 12–15 or more pairs, wide-spreading and nearly straight, the marginal vein nearly straight between the laterals and amply distinct from them, 2–4 mm. from the margin; inflorescence closely appressed-pubescent, the calyx-lobes and bracteoles fimbriate-ciliate. . . . . *E. calva*

Lateral veins 10 pairs or fewer, curved and ascending, at least the basal ones diminishing distally and not forming a definite marginal nerve; inflorescence glabrous, finely hispidulous, or with minute appressed dibrachiate hairs; calyx-lobes and bracteoles sparsely short-ciliate.

E. florida

Hypanthium, at least the base, thickly strigose or pubescent without; plants variously pubescent, the inflorescence usually markedly so; flowers and racemes various.

Leaves rounded or obtuse at tips, broadly elliptic-ovate, 7 cm. long or less; plants densely ferruginous-tomentose; flowers up to 4 pairs in a stout raceme 2 cm. long, or some flowers solitary near the base of new leafy shoots.

E. racemiflora

Leaves usually markedly acuminate, relatively narrow and more than 7 cm. long; plants various, not ferruginous-tomentose (in *E. atroracemosa* rufous-velutinous); flowers all racemose.

Bracts, bracteoles and calyx-lobes thickly beset with dark raised rounded glands, but inconspicuously if at all pubescent.

Pubescence of appressed reddish-brown, partly dibrachiate hairs, intermixed with shorter erect hairs; connate bracteoles forming an involucre-like cupule 2.5 mm. across; larger calyx-lobes 2.5 mm. long; style 5–6 mm. long; stamens about 100; coastal Ecuador (and Peru?) ..... *E. pustulescens*

Pubescence of appressed grayish-white hairs; cupule 4 mm. across; calyx-lobes 4 mm. long; style 8 mm. long; stamens 250–300; Amazonian Peru. *E. polyadena*

Bracts, bracteoles and calyx-lobes not at all glandular or inconspicuously so, but at least the calyx variously and often conspicuously pubescent.

Midvein elevated above in a narrow median line; inflorescence slender, the axis mostly not more than 1 mm. thick, closely appressed-pubescent with reddish brown, mostly dibrachiate hairs. . *E. dibrachiata*

Midvein impressed; inflorescence various.

Calyx-lobes 8–9 mm. long; bracteoles 6 mm. wide, 3–4 mm. long ..... *E. ulei*

Calyx-lobes 4.5 mm. long or less.

Bracteoles orbicular or wider than long, 5–6 mm. wide, 4–5 mm. long, membranous, glabrous, enveloping and concealing most of the bud; axis of the raceme 1 mm. wide; disk 4 mm. wide; calyx-lobes 4 mm. long ..... *E. ependytes*

Bracteoles ovate or deltoid, 3 mm. long and wide or often smaller, much shorter than the bud.

Axis of the raceme slender, 0.5–1 mm. thick (measured just below the lowest node); leaves mostly less than 10 cm. long; flowers small, the disk 2 mm. wide or less.

Leaves tomentose beneath, sub-vernicose and rough above, with many glandular dots. *E. curvipilosa*

Leaves glabrous or essentially so at maturity, the upper surface smooth, rather dull, eglandular . . . . . *E. limbosa*

Axis of the raceme stouter, 1–2 mm. thick or more (measured just below the lowest node); leaves mostly more than 10 cm. long; flowers larger, the disk 2.5 mm. wide or more.

Lateral and marginal veins impressed above, prominent beneath.

Lateral veins 8–12 pairs; leaves caudate-acuminate; disk 6 mm. wide; veins of the lower leaf-surface appressed-pubescent with tawny hairs . . . . *E. longicuspis*

Lateral veins about 15–20 pairs; leaves moderately acuminate; disk 3–3.5 mm. wide; veins of the lower leaf-surface velutinous with erect rufous hairs . . *E. atroracemosa*

Lateral and marginal veins elevated slightly on the upper surface when dry, inconspicuous or scarcely apparent beneath; lower leaf-surface glabrous or with very short, closely appressed colorless hairs.

Leaves glabrous beneath, rigidly coriaceous with involute margins, 1.6–2.2 times as long as wide; lower leaf-surface almost featureless, the veins scarcely apparent; pedicels stout, 3.5–6 mm. long; bracteoles 2.5 mm. long and wide; calyx-lobes 3.5–4.5 mm. long and wide; disk 4 mm. wide. *E. discors*

Leaves minutely appressed-pubescent beneath with hairs 0.1–0.2 mm. long; blades flat, 2–3.5 times as long as wide; veins apparent but inconspicuous beneath; pedicels up to 8–12 mm. long, or the upper ones only 2–4 mm. long; bracteoles 1.5 mm.

long and wide; calyx-lobes 2.5–3 mm. long and wide; disk 2.5–3 mm. wide.
E. riparia

A (See also first A, p. 667). Axis of the raceme much abbreviated, 2 cm. long or usually much less; if more than 1 cm. long the nodes approximate and the internodes 3 mm. long or less, and hardly longer than the thickness of the stout angled rachis; flowers often glomerate, sometimes solitary at the lowest nodes of new leafy branchlets, and in axillary clusters or short racemes on the same plant.

Leaves markedly bullate, large and broad (5–10 cm. wide), elliptic to obovate; racemes mostly 10–18 mm. long, the axis quadrangular, with up to 8–13 pairs of slender-pedicelled flowers.
E. tetrasticha

Leaves flat, or the principal veins impressed above; blades variously shaped.

Outer corky layers of the petiole irregularly loosening and flaking off, the whole much roughened and appearing 3–5 mm. thick; leaves large, 20–35 cm. long, 3–5 times as long as wide; flowers clustered on old wood, the axis 4 mm. long or less.

Leaves mostly oblanceolate, cordate-auriculate and subsessile (petiole 3–5 mm. long and about as thick); lateral veins about 15 pairs; midvein impressed above; calyx-lobes 4–5 mm. long ..... *E. multirimosa*

Leaves elliptic-oblong, rounded at base, the petiole 10–18 mm. long and 3–4 mm. thick; lateral veins 20–30 pairs; midvein convex above; calyx-lobes 6–8 mm. long.
E. tumulescens

Petiole smooth or wrinkled, not thick and exfoliating, rarely more than 2 mm. thick; leaves and flowers various.

Large-leaved, large-flowered, coarse species (leaves 23–35 cm. long or more; petioles 2–4 mm. thick; buds 1–2 cm. long; anthers 1–1.8 mm. long).

Lateral veins 25–30 pairs; marginal vein about as strong as the laterals; leaves about 4 times as long as wide; buds probably 2 cm. long, the suborbicular calyx-lobes up to 15 mm. long; bracteoles elliptic, probably deciduous.
E. scalariformis

Lateral veins 9–12 pairs, prominent and ascending but diminishing distally and scarcely forming a marginal vein; leaves 2.3–3 times as long as wide; buds about 1 cm. long, the triangular or oblong calyx-lobes 4–6 mm. long; bracteoles obovate, enveloping the bud, their narrow connate bases forming a collar about the pedicel..... *E. myrobalana*

Leaves usually smaller, or with a definite marginal vein; flowers various, the buds mostly less than 1 cm. long; bracteoles usually small and persistent.

Calyx-lobes foliaceous, elongate, erect, 7–9 mm. long at anthesis, separated by broad rounded sinuses; leaves 9–18 cm. long, with about 10 pairs of veins; anthers 0.3 mm. long..... *E. macrocalyx*

Calyx-lobes not or scarcely foliaceous, mostly broad, concave and imbricate; if more than 6 mm. long the margins variously connate or overlapping, and the anthers 1–1.5 mm. long; leaves various.

Leaves with a glabrous cartilaginous margin (visible from above), this formed by a heavy convex vein about twice as thick as the lateral veins; blades elliptic-oblong, 6–8.5 cm. wide, 12–14 cm. long; plants velutinous with coarse reddish-brown hairs; flowers in sessile glomerules..... *E. percincta*

Leaves without a heavy vein at the margin; plants not coarsely rufous-velutinous; flowers various.

Calyx-lobes large (the larger ones 5–8 mm. long or more), often as broad as long, much imbricated but distinct from the first, glabrous within; flowers probably always in sessile clusters on old wood.

Inflorescence minutely appressed-pubescent with glistening brown hairs; leaves papillose-roughened above; style 9–10 mm. long.
E. tenuimarginata

Plants glabrous except the ciliate margins of the perianth-lobes and bracteoles; leaves smooth above; style 15 mm. long or more.

Leaves 8–14 cm. wide and about 1.5 times as long; disk 4–5 mm. wide; anthers 2–2.3 mm. long.
E. chartacea

Leaves 4–7.5 cm. wide and 3–3.5 times as long; disk 6–7 mm. wide; anthers 1–1.3 mm. long. *E. illepida*

Calyx-lobes smaller (the larger ones 6 mm. long or less) or if longer (up to 9–10 mm. long) then oblong, usually hooded at tips and loosely connate in the bud; inner surface of calyx-lobes glabrous or pubescent; flowers various.

Bracteoles early deciduous (just before, or usually much before anthesis) or wanting (unknown in *E. quebradensis*), subulate or linear or sometimes lanceolate to ovate, narrowed at base, not connate.

Inflorescence, especially the hypanthium, heavily pubescent or tomentose with gray, white, or light yellowish hairs.

Branchlets and inflorescence tomentose with crisped, matted hairs; flowers sessile in small clusters; leaves lanceolate, 0.8–1.5 cm. wide and 5–6 times as long; Lambayeque..... *E. quebradensis*

Branchlets and inflorescence strigose or velutinous, the hairs mostly straight and ascending; flowers pedicellate; leaves ovate to elliptic or oblong.

Leaves 2–6 cm. long; flowers mostly 1–2 pairs, often from the lowest axils of new leafy branches.

Bracteoles ovate or lanceolate, blunt; pedicels, hypanthium and calyx velutinous; Junín..... *E. barbata*

Bracteoles subulate; hypanthium closely strigose, the pedicel sparsely so, the calyx glabrate; Bolivia... *E. mandonii*

Leaves 8–24 cm. long; flowers up to 6 pairs in axillary racemes; bracteoles subulate; Amazon basin..... *E. prosoneura*

Hairs of the inflorescence red or copper color or dark purplish-brown.

Hairs coarse, dark purplish-brown; leaves narrowly elliptic, 14–24 cm. long.
E. gomesiana

Hairs slender, reddish or pale copper color; leaves broader, mostly less than 15 cm. long.

Bracts 1 mm. long, broadly rounded at tips and convex on the backs, inconspicuous; calyx-lobes 2.5 mm. long, pubescent except at tips, triangular, the long points longer than the corolla in bud. . *E. aerosa*

Bracts elongate, 1.5–7 mm. long, delicate, loosely imbricated in 4 ranks at the bases of racemes and new shoots; calyx-lobes short and broadly rounded, 1.5 mm. long, glabrous both sides, much shorter than the corolla in bud. . . . . *E. patrisii*

Bracteoles persistent, usually until after the fruit falls, lanceolate or broader, broad-based, often connate and involucre-like.

Calyx-lobes oblong or elliptic, longer than the petals in bud, hooded and thickened at tips, connate in bud below the middle but separating and reflexed at anthesis, glabrous within; anthers 1–1.5 mm. long.

Buds 12–15 mm. long; calyx-lobes 8–10 mm. long in flower; stamens 300 or more.
E. schunkei

Buds 9 mm. long or less; calyx-lobes 3–5 mm. long in flower (up to 9 mm. long in fruit); stamens 75–175.

Lateral veins about 20 pairs; buds 6 mm. long, closed at the tip; pedicels 8–20 mm. long. . . . . *E. hexovulata*

Lateral veins 6–15 pairs; calyx-lobes distinct in bud at least distally; pedicels 2–8 mm. long (or a little longer in fruit).

Buds 4.5–5 mm. long; calyx-lobes 3–3.5 mm. long; style 6–7 mm. long.
E. cuspidifolia

Buds 6–9 mm. long; calyx-lobes 3.5–6 mm. long (to 9 mm. long in fruit); style (unknown in *E. acrensis*) 10 mm. long.

Calyx permanently velutinous; lateral veins 12–15 pairs, the basal not strongly ascending; leaves with numerous small convex glands above. *E. acrensis*

Calyx glabrescent; lateral veins 6–10 pairs, the basal ones often strongly ascending and not forming a definite marginal vein; leaves very smooth and eglandular above. *E. feijoi*

Calyx-lobes various, not hooded or thickened at the tips nor connate below the middle; anthers usually less than 1 mm. long.... Key B

B (See also second B, p. 676). Inflorescence, including the hypanthium, appressed-pubescent, velutinous or tomentose with reddish or reddish-brown hairs.

Bracteoles ovate, 1.5 mm. long, not connate.

Calyx-lobes 3–4 mm. long, concave, deciduous after anthesis; buds 4 mm. long; inflorescence and branchlets closely and finely tomentose with very small dark red-brown hairs; leaves 16–24 cm. long, the arcuate-ascending lateral veins scarcely forming a marginal vein..... *E. curvivenia*

Calyx-lobes 4–6 mm. long, flattened or cucullate and reflexed or spreading after anthesis; hairs appressed-ascending or spreading, lustrous, coppery or pale red, up to 0.5 mm. long; marginal veins about as strong as the laterals.

Leaves 4.5–8 cm. long, with 7–10 pairs of lateral veins; calyx-lobes flat and spreading after anthesis, the inner pair truncate, obovate..... *E. crucicalyx*

Leaves 15–21 cm. long, with 12–15 pairs of lateral veins; calyx-lobes reflexed and cucullate after anthesis.... *E. acrensis*

Bracteoles broadly ovate to rotund, fused by the basal margins and forming an involucre-like cupule beneath the bud and flower.

Veins impressed above, elevated and conspicuous beneath; leaves pale and smooth or appressed-pubescent beneath; inflores-

cence softly rufous-tomentose; margins of the bracteoles and calyx-lobes delicate and fracturing even in the bud. *E. macrophylla*

Veins slightly convex on both surfaces, not conspicuous on either; lower leaf-surface glistening, irregularly honeycombed or obscured by tiny hairs; inflorescence puberulent with short crisped hairs; bracteoles and calyx relatively tough and unbroken even in age.

Calyx-lobes 6 mm. long; leaves 12–19 cm. long with 12–15 pairs of lateral veins, appearing loosely cellular-honeycombed beneath..... *E. heterochroma*

Calyx-lobes 1.5–2 mm. long; leaves 6–13 cm. long with 6–10 pairs of lateral veins, the lower surface obscured by tiny glistening hairs..... *E. versicolor*

B (See also first B, p. 675). Inflorescence, particularly the hypanthium, glabrous or pubescent with pale white or yellowish hairs (hairs of young vegetative parts sometimes reddish).

Leaves coarsely impressed-punctate and dark above, the lateral veins not at all or scarcely apparent; inflorescence usually with some elongate internodes, appressed-pubescent with pale hairs; blades 10 cm. long or less.

Leaves acuminate and prominently mucronate, very variable in size and shape, the blades usually lanceolate but varying from ovate to linear..... *E. biflora*

Leaves cuneate-obovate, 4 cm. long or less, rounded or bluntly pointed at apex..... *E. inundata*

Leaves not impressed-punctate, the lateral veins usually apparent above, the blades usually larger; axis of raceme with approximate nodes.

Midvein elevated above in a sharply defined pubescent ridge; leaves 7 cm. long or less; pedicels filiform, mostly 15–30 mm. long, with 4-ranked scarious deciduous bracts (1–3.5 mm. long) at base..... *E. subterminalis*

Midvein impressed to convex above; leaves various; pedicels mostly 10 mm. long or less, the bracts inconspicuous or sometimes persistent.

Flowers usually 2, one from each side of the axillary bud, slender-pedicellate; leaves mostly obovate or oblanceolate, 3–6 cm. long, obtuse..... *E. punicifolia*

Flowers fasciculate or in approximate pairs in short racemes, usually 4 or more; leaves mostly larger and acuminate.

Inflorescence, including hypanthium, densely hispidulous with erect pale hairs about 0.1 mm. long; raceme up to 8 mm. long with 2–5 pairs of flowers on pedicels 2–4 mm. long; leaves elliptic, 4–7 cm. long, subcaudate-acuminate.....*E. micranthoides*

Inflorescence, at least the hypanthium, glabrous or sparingly strigose or pilose; leaves and inflorescence various.

Branchlets, petioles and inflorescence somewhat strigose with white appressed hairs; flowers middle-sized, the buds 5–10 mm. long, the disk 3–4 mm. wide; leaves 9–18 cm. long, 2.5–3 times as long as wide.

Buds 7–10 mm. long; marginal vein evident, 2–3 mm. from margin; petiole heavily strigose with hairs up to 0.5–0.8 mm. long, spirally longitudinally furrowed and transversely wrinkled; hypanthium with a few long hairs.....*E. spruceana*

Buds 5–6 mm. long; marginal vein not distinct from the laterals; petiole nearly glabrous, merely irregularly wrinkled in drying; hypanthium with numerous very fine short hairs.....*E. atrosquamata*

Branchlets, petioles and inflorescence glabrous, or pubescent with very small dibrachiate hairs or minute erect hairs, or sparse stiff and ascending reddish or pale hairs, in one species tawny-hirsutulous; flowers smaller, the buds 5 mm. long or less, the disk 1–2.5 mm. wide.

Flowers sessile or nearly so, in clusters on the stems; pedicels 2 mm. long or less (up to 4 mm. in fruit).

Plants glabrous or nearly so; leaves very stiff and coriaceous, the midvein concave above; style (as far as known) 10 mm. long or more; stamens probably always more than 50 and the hypanthium obconic.....*E. nigra*

Plants tawny-hirsutulous (the hypanthium orbicular, sparingly pilose); leaves membranous, the persistently hirsutulous midvein narrowly impressed above; style 6.5 mm. long; stamens about 35–50; flowers very small, the calyx-lobes 1.3 mm. long, the disk 1.3 mm. wide..*E. origanoides*

Flowers on definite slender pedicels mostly 4–10 mm. long; style mostly less than 10 mm. long; hypanthium mostly campanulate.

Leaves elliptic-ovate, 5–6 cm. long or less; plants sparingly strigose with reddish or yellowish hairs up to 0.5 mm. long, the hypanthium glabrous; midvein flat above; flowers tiny, the calyx-lobes 1 mm. long, the disk 1 mm. wide; stamens 36 or fewer..... *E. malpighioides*

Leaves usually more than 5 cm. long, rarely ovate; pubescence not as above; flowers larger; stamens 60–75 or more.

Midvein on upper surface of leaf flat or convex (then sometimes with a shallow median furrow near base), never narrowly impressed.

Foliage and flowers drying light yellow or yellow-green; leaves relatively narrow, mostly less than 10 cm. long; flowers usually 2 pairs from an axis 1 mm. long..... *E. flavescens*

Foliage and flowers darkening in drying; leaves and flowers various.

Petioles 10–15 mm. long; flowers 1 or 2 pairs, from an axis 1–2 mm. long.. *E. dittocrepis*

Petioles 3–6 mm. long; axis of raceme 2–6 (–17) mm. long, bearing 2–8 approximate decussate pairs of flowers.

Leaves narrow, 2–4.5 cm. wide, 2.5–3.5 times as long, the lower surface with numerous and conspicuous glandular dots. *E. egensis*

Leaves broader, 4–6 cm. wide, twice as long, the lower surface sparingly dotted. *E. ochrophloea*

Midvein impressed on the upper surface, the actual vein narrow and often obscured in the bottom of a deep fold or furrow.

Axis of raceme up to 5 mm. long.
(see *E. maculata* under *E. schomburgkii*)

Axis of raceme 2.5 mm. long or usually less, the flowers in 1–5 approximate pairs.

Leaves mostly elliptic-lanceolate, long-pointed, very smooth and glabrous above; lateral veins inconspicuous, sometimes reddish; plant nearly glabrous, the branchlets and pedicels sometimes minutely and sparsely hispidulous.....*E. schomburgkii*

Leaves elliptic to obovate, shortly and often bluntly acuminate, the veins usually somewhat elevated and forming an evident reticulum on the upper surface; pubescence various.

Inflorescence glabrous or minutely pubescent with pale erect hairs; leaves elliptic, blunt-pointed or obscurely acuminate.....*E. tapacumensis*

Inflorescence more or less appressed-puberulent with minute and partly dibrachiate hairs.

Leaves oblanceolate or obovate, 14–18 cm. long, coarsely veiny-reticulate. *E. discreta*

Leaves elliptic, 7–11 cm. long, finely veiny-reticulate.....*E. quadrijuga*

Eugenia acrensis McVaugh, Fieldiana Bot. 29: 202. 1956.

A shrub 3.5 meters high, the vegetative buds and inflorescence velutinous with somewhat appressed lustrous coppery-red hairs up to 0.5 mm. long, the plant otherwise glabrous except for a few sessile and mostly dibrachiate dark appressed hairs up to 0.3 mm. long, on the lower leaf-surface; leaves elliptic, 5–8 cm. wide, 15–22 cm. long, 2.5–3 times as long as wide, narrowly acuminate, acute at base, the margins decurrent on the channeled petiole 2 mm. thick, 10 mm. long; midvein sulcate above (or impressed near base), elevated distally in a narrow central line, prominent beneath; lateral veins 12–15 pairs, convex above but somewhat impressed, prominent beneath; marginal vein about equaling the laterals and strongly arched between them, 3–6 mm. from margin; upper surface of blade lustrous with small convex reticulated veins and scattered convex glandular dots, the latter about 4 per square mm.; lower surface dull and paler, very minutely verruculose, the glandular dots apparent; racemes abbreviated, 5 mm. long, bearing 1–3 approximate decussate pairs

of flowers on stout pedicels 1 mm. thick, 2–5 mm. long (or a little longer in fruit); bracts not seen; bracteoles persistent, ovate, 1.5 mm. long; buds about 7 mm. long, the hypanthium 2–2.5 mm. long, rounded to base; calyx-lobes not or scarcely coherent but covering the corolla almost to the time of opening, strongly imbricated, glabrous inside, 4 mm. wide, 6 mm. long, membranous-margined except at the tip, strongly reflexed but with cucullate tips in anthesis, finally separating by longitudinal slits in the sinuses, the slits 1.5–2 mm. long and extending down to the margins of the staminal ring; disk 2.5 mm. wide, glabrous except for a few long hairs at the base of the style; style not seen; stamens probably about 200; anthers 1.2 mm. long in bud; petals glabrous, not seen expanded; ovary bilocular, the ovules 12–15 in each locule, radiating from a centrally attached placenta; fruit long-ellipsoid, 1 cm. in diameter, 2 cm. long, glabrescent; seed one, 1.5 cm. long, the cotyledons apparently distinct.—Known only from the type, *Krukoff 5619*, from near mouth of Rio Macauhan, Terr. of Acre, Brazil.

Peru (probably). Amazonian Brazil.

Eugenia aerosa McVaugh, Fieldiana Bot. 29: 203. 1956.

Tree up to 7 (–15) meters high, the branchlets, inflorescence and vegetative buds densely covered, and the lower leaf-surface sparingly beset, with appressed lustrous straight pale copper-colored hairs up to 0.5 mm. long; leaves elliptic-oblong, 5.5–6.5 cm. wide, 13–15 cm. long, about 2.3–3 times as long as wide, about equally narrowed to the narrowly or caudately acuminate tip and to the rounded or convexly acute base, the margins decurrent on the deeply channeled petiole 1.5 mm. thick, 7–10 mm. long; midvein impressed above, prominent beneath; lateral veins 8–10 pairs in addition to some intermediates, somewhat elevated above, elevated and prominulous beneath; marginal vein about equaling the lateral ones and arched between them, 3–5 mm. from margin, a weak submarginal vein beyond it at the very edge of the blade; blades nearly concolorous, olive green when dry, without apparent glands even when young, the upper surface smooth and lustrous, the lower dull and strigose; flowers from the lowest 2–3 nodes of a new leafy branch, or the inflorescence an abbreviated axillary raceme, the axis 4-angled, 1 mm. thick, up to 6 mm. long, bearing up to 6 decussate, approximate pairs of flowers on slender compressed pedicels 1 mm. thick, 10–18 mm. long; bracts broad, rounded on the backs, nearly glabrous, 1 mm. long; bracteoles subulate or lanceolate and folded, silky, ascending, 1.3–2.8 mm. long, deciduous after anthesis; buds about

6 mm. long, narrowly pyriform, the long-pointed calyx-lobes exceeding the globe of the petals until anthesis; hypanthium narrowly campanulate, 2 mm. long; calyx-lobes 3 mm. wide, about 2.5 mm. long, deltoid, apparently valvate, pubescent inside except the tips, reflexed at anthesis; disk 3.5 mm. wide, glabrous; style 10 mm. long; stamens about 100, about as long as the style, the anthers 0.3 mm. long or less, broader than long; petals obovate, about 4 mm. wide, 4–5 mm. long; ovary bilocular, the ovules about 30 in each locule, radiating from a short, centrally affixed placenta; fruit ellipsoid, somewhat attenuate at base, 1.3 cm. in diameter, 2.3 cm. long.—The single fruiting specimen, probably belonging to this species, is Krukoff's no. 6870, from Livramento, Amazonas, Brazil. Univ. of Mich. Neg. 467.

Loreto: Mishuyacu, near Iquitos, alt. 100 meters, forest, May, June, 1930, *G. Klug 1535* (F, type). Iquitos, Aug., 1925, *G. Tessmann 5355*.

Eugenia atroracemosa McVaugh, Fieldiana Bot. 29: 203. 1956.

A tree 4 meters high, the inflorescence, branchlets and veins of the lower leaf-surface velutinous with crowded erect sharp slender lustrous hairs 0.5 mm. long (or up to 1 mm. long on vegetative buds and bracts), the hairs reddish brown on the leaves and branchlets, in the inflorescence from dark reddish brown to dark brown or almost black; leaves coriaceous, oblong to ovate or oblanceolate, 5–8 cm. wide, 11–18 cm. long, (1.5–) 2–3 times as long as wide, the tip abruptly or sometimes slenderly acuminate, the base rounded or obtusely narrowed, the margins abruptly decurrent on the stout petiole 1.5–2 mm. thick, 8–10 mm. long; midvein glabrous to hirsutulous above, impressed, prominent beneath; lateral veins 15–20 pairs in addition to some intermediate ones, narrowly impressed above, prominent beneath; marginal vein about equaling the laterals, impressed, little arched between them, 2–5 mm. from margin; leaves nearly concolorous, smooth and glabrescent above, impressed-puncticulate, the lower surface dull and hirsutulous, with small often obscure gland-dots; inflorescence a stout axillary raceme 5–7.5 cm. long, the axis up to 2 mm. thick at base, with 6–8 pairs of flowers on divaricate pedicels 1.5 mm. thick, 4–8 mm. long in flower; bracts and bracteoles glabrous inside, the former ovate-deltoid, pointed, broad-based, deciduous, 3–4 mm. long; bracteoles broadly ovate-deltoid, a little narrowed at base and not connate, persistent, about 3 mm. wide, 2–2.5 mm. long; buds about 7 mm. long, the hypanthium campanulate-oblong, 2–3 mm. long; calyx-lobes broadly

rounded or oblong, finely appressed-pubescent inside except at base, 2.5–3 mm. long, 3–4 mm. wide, the outer pair a little shorter; disk 3–3.5 (–6) mm. wide, the center 1.5–2 mm. wide, hirsute; style glabrous, 6–8 mm. long; stamens 125–150, about as long as the style, the anthers about 0.5 mm. long; petals elliptic, 2.5–4 mm. wide, 6 mm. long, appressed-silky on the back, the thin margins fimbriate-ciliate; ovary bilocular, the ovules about 7 in each locule, radiating from a centrally attached placenta; flowers cream color (Klug); fruit globose, hard, 2 cm. in diameter.—Univ. of Mich. Neg. 476.

San Martín: Zepelacio, near Moyobamba, alt. 1100–1200 meters, forest, Oct.–Nov., 1933, *G. Klug 3368* (F, type). Amazonian Brazil.

Eugenia atrosquamata McVaugh, Fieldiana Bot. 29: 204. 1956.

Shrub or tree, the branchlets, petioles, inflorescence (especially the hypanthium) and lower leaf-surface appressed-pubescent with small white hairs up to 0.2 mm. long; leaves elliptic, 4–6 cm. wide, 9–15 cm. long, about 2.5 times as long as wide, the tip decurved and bluntly acuminate, the base acute or convexly acute, the margins decurrent on the petioles 1–2 mm. thick, 6–10 mm. long; midvein flat or concave above, prominent beneath; lateral veins 6–10 pairs, flat or convex above, prominent beneath, ascending and diminishing distally, not forming a definite marginal vein along most of the blade, but recurving about 3 mm. from margin to form loops joining the next succeeding vein about 8 mm. from margin; blades dark green and smooth, with few or no glandular dots above, the lower surface dull, paler, strigose, finely dark-dotted; inflorescence an abbreviated axillary raceme, the axis 1–3 mm. long, bearing 4–6 approximate decussate pairs of flowers on pedicels 1 mm. thick, 3–12 mm. long; bracts dark, glabrous, imbricate, gland-dotted, rounded on the back, 2 mm. long, the tips rounded and erose-ciliate; bracteoles ovate, 1.5 mm. long and wide, persistent, not connate, thin-margined, dark and glabrous and contrasting with the pale-strigose pedicel and hypanthium; buds 5–6 mm. long, pyriform, the hypanthium campanulate, 2 mm. long; calyx-lobes broadly rounded or bluntly triangular, glabrous inside, gland-dotted, unequal, the smaller 2–2.5 mm. long and wide, the larger pair 4 mm. wide, 3.5 mm. long; disk 3 mm. wide, glabrous; style 5–7 mm. long; stamens about 100, to 8 mm. long, the anthers 0.8 mm. long; petals concave, obovate, 4–4.5 mm. wide, 6–7 mm. long; ovary bilocular, the ovules about 15 in each locule, radiating from a short, centrally affixed placenta.—Univ. of Mich. Neg. 439.

Loreto: Iquitos, anno 1924, *G. Tessmann 5130* (G, type). Amazonian Colombia.

Eugenia barbata McVaugh, Fieldiana Bot. 29: 204. 1956.

Probably a shrub, 4–8 meters high, the branchlets and young leaves hispidulous with erect stiff sordid hairs up to 0.3–0.5 mm. long, the inflorescence conspicuously gray-velutinous with similar but paler and longer, often somewhat appressed hairs; leaves rather broadly elliptic, 1.5–3.5 cm. wide, 3–5 cm. long, 1.3–2 (–2.4) times as long as wide, acutely pointed or sometimes blunt, acute to somewhat rounded at base, the somewhat cartilaginous margins only very shortly decurrent on the petiole up to 1 mm. thick, 2.5–5 mm. long; midvein above hispid, somewhat sulcate and slightly impressed at least near base, prominent beneath; lateral veins about 10 pairs, inconspicuous above, prominulous beneath, not much larger than the intermediate veins; marginal vein a little weaker than the laterals and markedly arched between them, 1–3 mm. from margin; leaves lustrous above and minutely muriculate from the enlarged hair-bases, especially along the midvein near the base; lower surface dull and paler, hairy; inflorescence axillary and sometimes also terminal, the axillary axis abortive at tip, 1 mm. long or elongate and leafy, the flowers usually 2, opposite and solitary from the lowest node, or sometimes an additional pair from the next node; flowers sometimes also in 1 or 2 decussate pairs on short new terminal leafless shoots; bracts and bracteoles hairy, ovate or lanceolate, bluntly pointed, deciduous at about anthesis, 2–3.5 mm. long, the bracteoles sometimes with abortive flower-buds in the axils; pedicels 2–5 (–15) mm. long, and up to 1 mm. thick (appearing thicker because of the heavy coating of hairs); buds 9–10 mm. long, broadly obovoid, the hypanthium campanulate; calyx-lobes in 2 nearly equal pairs, suborbicular, concave, loosely hairy without, ciliate-fringed, finely appressed-pubescent within, 4–5 mm. long and wide; disk hairy, about 4 mm. wide; style 9–10 mm. long, hairy near base; stamens about 250, up to 12 mm. long, the anthers about 0.4 mm. long; petals white, minutely ciliate, otherwise glabrous except a few hairs on the back, suborbicular or obovate, erose-margined, 5–7 mm. wide, 6–8 mm. long; ovary bilocular, the ovules about 20 in each locule in a pendent head-like cluster.—Univ. of Mich. Neg. 441.

Junín: Lado derecho del valle del Río San Bernardo, 2200–2300 m., en monte bajo, abierto, compuesto de arbustos, Apr. 2, 1913, *A. Weberbauer 6558* (US, type); Abajo de Pariahuanca, 1800 m., bosque compuesto de arboles y arbustos, Apr. 8, 1913, *Weberbauer 6594*.

Eugenia biflora (L.) DC. Prodr. 3: 276. 1828. *Myrtus biflora* L. Syst. Nat. ed. 10: 1056. 1759. *E. xylopifolia* DC. l.c. 279. *E. racemosa* DC. l.c. 281. *E. sericiflora* Benth. Bot. Voy. Sulph. 89. 1844. *Myrcia erythroxylon β virescens* Berg, in Mart. Fl. Bras. 14, pt. 1: 173. 1857. *E. freireana* Berg, in Mart. l.c. 305. *E. hoffmannseggii* Berg, in Mart. l.c. 315. *E. acuminatissima* Berg, in Mart. l.c., not of Miquel. *E. loretensis* Diels, Bot. Jahrb. 37: 597. 1906. *E. leptophlebia* Diels, Verh. Bot. Ver. Brandenb. 48: 192. 1907. *Myrcia paivae* var. *gracilis* Lingelsh. Fedde Repert. Sp. Nov. 7: 243. 1909. *E. amanuensis* Steyermark, Fieldiana Bot. 28: 1010. 1957. *E. caurensis* Steyermark, l.c.

Shrub or small tree up to 4 meters high, pubescent, often with conspicuous pale appressed silvery-silky pubescence on the inflorescence and young growth, the hairs up to 1 mm. long; leaves usually lanceolate, varying to ovate or to very narrowly lance-linear, (0.5–) 1–1.5 (–3) cm. wide, 5–8 (–10) cm. long, 3–4 times as long as wide (twice as long as wide in ovate-leaved forms, and up to 15 times in very narrow-leaved forms); blades flat and silky or glabrous beneath, the upper surface with numerous impressed glands, occasionally glabrous, usually sparingly beset with white cobwebby hairs up to 1 mm. long; blades prominently long-acuminate, almost caudate, the acumen often slender and curved, normally prominently mucronate, base of blade rounded or cuneate; petiole channeled above, stout, 2.5–4 mm. long; midvein impressed above, prominently raised beneath; lateral veins very slender, 12–20 pairs, often not apparent in dried material or evident on the lower surface only; marginal vein about as conspicuous as the laterals and little arched between them, 1 mm. or less from margin; inflorescence axillary, usually short and racemoid, the axis 0.5–1.5 (–3) cm. long, about 6-flowered, the terminal flower usually aborting;[1] pedicels 4.5–12 mm. long, 0.5 mm. thick, often longer than the axis, appressed or ascending in flower, spreading in fruit; bracts somewhat persistent, paired, narrowly triangular, acute, 2–3 mm. long; bracteoles like the bracts but broader and connate-perfoliate, forming a boat-shaped cup about 1 mm. high

[1] The inflorescence in this species is extremely plastic. It may be regarded as an axillary branch which may at one extreme be so much reduced that the axis is not readily apparent and the "raceme" appears as a solitary axillary flower. At the other extreme the "raceme" may bear one or two pairs of flowers at the base and continue above this as a leafy vegetative branch. The inflorescence may be strictly "racemose," that is, with 2–5 pairs of opposite, decussate flowers; in slightly more expanded variants, the upper nodes may bear 2 flowers each, or the lowermost node may bear 2 short racemes instead of 2 solitary flowers; in this latter case the lowermost node is actually in the axil of the leaf, and the inflorescence appears as 3 racemes, one above another in the axil.

and 3.5–4.5 mm. long, which is persistent until after the fruit matures; margins of the bracteoles often scarious, glabrous; calyx-lobes 4, oblong with rounded tip, silky on both sides, at maturity 2 mm. wide, 2–2.5 mm. long; disk flat, strongly 4-angled, about 2 mm. wide, somewhat pubescent or the center glabrous; style 4–6 mm. long, glabrous; petals white, elliptic, about 3 mm. wide, 5 mm. long, ciliate-fringed at tip; stamens about 50, 4–7 mm. long; fruit oblong or subglobose, glandular-verruculose, about 6 mm. long and nearly as thick. —F.M. Negs. 7951, 19914, 19946, 19953, 19989, 23555, 23556; Univ. of Mich. Neg. 584.

San Martín: Lamas, *Ferreyra 4665, 4674.* Tarapoto, *Ule 6363; Mathews 1449* (herb. Kew); *Williams 5404, 5625, 6432;* San Roque, *Williams 7078.* Moyobamba, 2800 feet, *Sandeman 108;* Moyobamba, *Mathews* in 1835; *Osgood & Anderson 41, 42; Woytkowski* (*USM 15438*); *Weberbauer 4486,* type of *E. loretensis.*—Loreto: Mouth of Río Santiago above Pongo de Manseriche, *Mexia 6161.* Balsapuerto, *Sandeman s.n.* Masisea, *Tessmann 3119.*—Locality uncertain: *Collector unknown, no. 717,* ex herb. Miers. West Indies; lowlands of northern South America to eastern Bolivia.

In Peru, and probably throughout the range of the species, the most common and most readily recognized form is one with ovate-lanceolate, caudate-acuminate leaves with thick, opaque blades in which the veins are scarcely apparent, width of the blade 1–2.5 cm., and the length 2.5–4 times the width. The species is a most variable one, however; Urban, for example, recognized in the West Indies no fewer than 5 varieties. In Peru, and adjacent Bolivia, the most common variants are those involving the stoutness of the inflorescence and the shape of the leaves. The inflorescence may become much attenuated and the pedicels filiform; the most extreme example of this that has come to my attention was the plant described as *Myrcia paivae* var. *gracilis* Lingelsh., Buchtien's no. 1744, from northern Bolivia (Fedde Repert. Sp. Nov. 7: 243. 1909). Leaves which seem otherwise typical may be as much as 7 cm. long and less than 7 mm. wide (e.g. as in Mexia's no. 6161). In a collection from Juanjuí, San Martín, Klug's no. 3811, the leaves are as much as 10 cm. long and only 5–6 mm. wide; these retain the characteristic mucronate tips, but the blades are thin in texture and the lateral and marginal veins are evident on the lower surface. Finally, in certain collections (e.g. Klug's no. 4055, from Chazuta, San Martín, and Tessmann's no. 4048, from Pongo de Manseriche) the leaves are thin and veiny, narrow and willow-like, 5–10 mm. wide and 3–6 cm. long,

and the blades are blunt-tipped or merely sharp-pointed, but lacking mucronate tips. Superficially these look very different from other specimens of *E. biflora*, but in characters of the inflorescence and in the general features of the foliage and pubescence they agree perfectly with that species. These specimens with blunt-tipped leaves have been referred by some authors to *Eugenia chiquitensis* Berg, a somewhat closely related plant of eastern Bolivia; in *E. chiquitensis*, however, the inflorescence and hypanthium are nearly glabrous.

An exceptionally tomentose plant with somewhat larger and more numerous flowers than *E. biflora*, but of the same general affinity, has been collected in northern Bolivia (Williams, nos. 101, 1499). This has been referred to the Colombian species *E. albida* Humb. & Bonpl. (*E. dysantha* Benth.) but probably represents an undescribed species. It is thus far unknown from Peru.

Eugenia calva McVaugh, Fieldiana Bot. 29: 205. 1956.

A tree 6 meters high, the inflorescence (except the flowers), vegetative buds and youngest growth covered with closely appressed lustrous pale grayish-brown hairs 0.2 mm. long, the foliage and branchlets soon glabrescent; leaves lance-ovate or elliptic, 3.5–6 cm. wide, 9–15 cm. long, 2.5–3 times as long as wide, acute and slenderly acuminate at tip, rounded or subacute at base, the margins cuneately decurrent on the inner angles of the deeply channeled petiole 1 mm. thick, 10 mm. long; midvein impressed above, prominent beneath; lateral veins 12–15 pairs in addition to some intermediate ones, slightly elevated above, prominulous beneath; marginal vein about equaling the lateral ones and slightly arched between them, 2–4 mm. from margin; blades dark green, lustrous and impressed-puncticulate above, paler, dull and finely dark-dotted beneath; inflorescence (seen in immature bud only) an axillary raceme 4.5–5.5 cm. long, the axis bearing 7 pairs of flowers on pedicels 2–3 mm. long, each axil bearing apparently a second and shorter raceme (with 6 pairs of flowers) at the base of the first, this shorter raceme actually the lowest (tangential) branch of the other; immature buds 2–3 mm. long, glabrous except the fringed calyx-lobes; bracts ovate, pointed, broad-based, divaricate or somewhat reflexed, 1 mm. long; bracteoles broadly rounded or blunt-pointed, connate into a boat-shaped involucre 2 mm. long; hypanthium campanulate, 1–1.5 mm. long; calyx-lobes imbricate, broadly rounded, finely appressed-pubescent inside, in unequal pairs, the larger (inner) pair 1.5 mm. long, 1.8 mm. wide, the smaller pair 1 mm. long, 1.5 mm. wide; disk glabrous; style

glabrous, not seen expanded; stamens about 100; petals white, suborbicular, ciliate, 2 mm. or more long; ovary bilocular, the ovules about 10 in each locule, radiating in one plane from the margin of a flat, centrally affixed placenta.—Univ. of Mich. Neg. 475.

Loreto: Florida, Río Putumayo, mouth of Río Zubineta, alt. 180 meters, forest, May–July, 1931, *G. Klug 2146* (F, type). "Choj-ey," "Muy-ey" (Huitoto, Klug).

Eugenia chartacea McVaugh, Fieldiana Bot. 29: 206. 1956.

Tree 15 meters high, completely glabrous except the staminal ring and the minutely ciliate petals and calyx-lobes; leaves ovate or broadly elliptic, 8–14 cm. wide, 11–21 cm. long, about 1.5 times as long as wide, bluntly deltoid-acuminate, rounded at base, the margins decurrent on the inner wing-like angles of the deeply channeled petiole 1.5–2 mm. thick, 10 mm. long; midvein elevated above in a narrow median ridge, this often somewhat impressed, the vein prominent beneath; lateral veins 7–8 pairs, often somewhat elevated above but sulcate, prominulous beneath; marginal vein about equaling the laterals and arched somewhat between them, 5–15 mm. from margin; lowest lateral vein often ending in a slender submarginal vein 1–5 mm. from margin; leaves nearly concolorous, smooth and lustrous especially above, with a few small elevated glandular dots on both surfaces; inflorescence on old wood, in clustered sessile abbreviated racemes, each with 1–2 approximate decussate pairs of flowers, on pedicels 1–1.5 mm. thick, 10–15 mm. long; bracts minute; bracteoles cartilaginous, spreading, persistent, triangular, 0.7 mm. long, 1.5 mm. wide; bud 12–18 mm. long, globose above the fleshy urceolate hypanthium 5 mm. long; calyx-lobes broadly rounded or obovate, concave, when dry rigid, chartaceous and stramineous, imbricate, 8–10 mm. wide, 10–12 mm. long, spreading-reflexed after anthesis, the inner thin-margined laterally; disk quadrangular, 4–5 mm. wide, the staminal ring 1.5 mm. wide, the glabrous center depressed; style 12–15 mm. long or more, with a few hairs at base; stamens 250–300, probably as long as the style, the anthers 2–2.3 mm. long, erect in bud; petals fleshy, drying chartaceous, concave, ovate, 12 mm. wide and a little longer than this; ovary bilocular, the ovules about 20 in each locule, radiating from a short placenta on the central axis.—Known only from the type, *Krukoff 4951*, from basin of Rio Juruá, Amazonas, Brazil.

Peru (probably). Amazonian Brazil.

Eugenia crucicalyx McVaugh, Fieldiana Bot. 29: 206. 1956.

A shrub, the branchlets, vegetative buds and inflorescence covered with appressed-ascending, straight, pale reddish hairs up to about 0.5 mm. long; a few minute, pale, appressed, partly dibrachiate hairs 0.1–0.2 mm. long persisting on the leaves, especially beneath; leaves elliptic, 1.8–4 cm. wide, 4.5–8 cm. long, a little more than twice as long as wide, short-acuminate, narrowed about equally to base and apex, the margins decurrent on the petiole 1.5 mm. thick, 6–8 mm. long; midvein convex above or channeled when young, prominent beneath; lateral veins 7–10 pairs, pale and elevated both sides; marginal vein about equaling the laterals and arched between them, 1.5–4 mm. from margin, with a network of small submarginal veins beyond it; blades concolorous, lustrous, drying pale ashy brown, gland-dotted but the dots becoming obscure at maturity; inflorescence an abbreviated axillary raceme, the axis 8 mm. long or usually less, 1–1.5 mm. thick, with 1–3 decussate pairs of flowers on pedicels up to 1.5 mm. long; bracts lanceolate, acute, 1–3 mm. long; bracteoles ovate, pointed, 1.5 mm. long; buds 7–8 mm. long, pyriform, closely sessile in the bracteoles; hypanthium campanulate, somewhat 4- or 8-angled, 2–2.5 mm. long, heavily rufous-velutinous; calyx-lobes 2–3 times as long as the hypanthium, in unequal pairs, the outer ovate-triangular, concave, broad at base, bluntly pointed, about 4 mm. wide, 5 mm. long; inner pair obovate, flat after anthesis, narrowed to the base, truncate at apex, 4–5 mm. wide, 6 mm. long; calyx completely glabrous within, widely spreading at anthesis; disk 2–2.5 mm. wide, flat, appearing wider because of the broad petal-scars; style glabrous, sparingly verruculose, about 8 mm. long; stamens 200–250, about as long as the style; petals elliptic, glabrous, 5 mm. wide, 8 mm. long; ovary bilocular, the ovules about 15 in each locule, radially arranged on a short placenta attached to the central axis.—Univ. of Mich. Neg. 466.

San Martín: Tarapoto, 360–900 meters, forest, Dec. 4, 1929, *Williams 6216* (F, type).

Eugenia curvipilosa McVaugh, Fieldiana Bot. 29: 206. 1956.

Shrub 3 meters high, the branchlets, inflorescence and lower surface of the leaves covered by mostly flexuous or curved pale brown hairs up to 0.5 mm. long, or longer at the nodes and on bracts and buds. Leaves elliptic-ovate, subcoriaceous, 1.7–4 cm. wide, 4–7 cm. long, 1.5–2 times as long as wide, shortly and broadly acuminate, rounded or obtuse at base, the margins abruptly decurrent on the

blunt inner angles of the channeled petiole 1 mm. thick, 5 mm. long; midvein impressed above, prominent beneath; lateral veins about 10 pairs in addition to some intermediates, obscurely and narrowly impressed above, elevated beneath, inconspicuous on both sides; marginal vein about equaling the laterals and somewhat arched between them, 2–3.5 mm. from margin; blades probably darker green above, sub-vernicose and somewhat rough, essentially glabrous except the midvein, with numerous small, often impressed dots; dots in the type collection black, probably from the action of a fungus; lower surface paler, permanently sub-tomentose, without apparent glandular dots; inflorescence an axillary raceme, the axis 1–2 cm. long, compressed and up to 1 mm. wide, bearing 3–6 decussate pairs of flowers on slender pedicels 0.5 mm. thick, 4–6 mm. long; bracts ovate, blunt, probably deciduous, 1–1.5 mm. long; bracteoles ovate, glabrescent, blunt-tipped, 2 mm. long and 2.5 mm. wide, connate, the involucre 0.5 mm. high, persistent; buds 4 mm. long, pyriform, the hypanthium campanulate, 1–1.5 mm. long, densely pale-strigose; calyx-lobes broadly rounded, closely appressed-pubescent inside, unequal, the shorter pair 1 mm. long, the larger 1.5–2 mm. wide, 1.5 mm. long; disk 1.5–2 mm. wide, the staminal ring hairy; style about 4(?) mm. long; stamens 50–60, up to more than 5 mm. long, the anthers 0.6 mm. long; petals white, obovate-elliptic, ciliate, 3–4 mm. wide, 5 mm. long; ovary bilocular, the ovules about 5 in each locule, radiating from the margin of a centrally affixed placenta.—Univ. of Mich. Neg. 447.

Cajamarca: Valley of the Río Llaucán, near Pión, alt. 1700–1800 meters, June, 1915, *Weberbauer 7137* (F, type).

Eugenia curvivenia McVaugh, Fieldiana Bot. 29: 207. 1956.

A shrub 6 meters high, the branchlets, petioles, midvein on the lower leaf-surface, and the inflorescence closely and finely tomentose with very small dark red-brown hairs, the leaves soon glabrous, finely appressed-pubescent with pale hairs beneath; leaves broadly elliptic-ovate, coriaceous, 8–12.5 cm. wide, 16–24 cm. long, 2–2.5 times as long as wide, abruptly short-acuminate, the tip decurved; base rounded, the margins decurrent on the petiole 4 mm. thick, 15 mm. long; midvein elevated in a narrow median ridge most of its length above, prominent beneath; lateral veins about 10 pairs, conspicuous and strongly arcuate-ascending, convex but impressed above, prominent beneath, diminishing distally to a point 1–2 mm. from margin, those toward the tip of the blades forming strong marginal arches; blades dark green, smooth and lustrous above with a

few large elevated glands especially near base, the lower surface pale brown and duller, gland-dotted; inflorescence on old wood, usually several abbreviated racemes clustered in the axils on short spurs, the axis 1–2 mm. long, stout, bearing 1–3 approximate decussate pairs of flowers on compressed pedicels 1 mm. thick, 2–3.5 mm. long; bracts not seen; bracteoles persistent, broad-based, ovate, obtuse, not connate, 0.8–1.5 mm. long; buds pyriform, 4 mm. long; hypanthium campanulate, 2 mm. long, angled in drying; disk 2 mm. across, hairy except the center; calyx-lobes minutely ciliate, imbricate, a little fleshy, suborbicular to oblong, glabrous inside, deciduous after anthesis, 3 mm. wide, 3–4 mm. long, the inner pair longer and with thin lateral margins; style 5 mm. long, glabrous; stamens 50–60, 5 mm. long, the anthers 1 mm. long; petals elliptic, minutely ciliate but otherwise glabrous, 3 mm. wide, 6 mm. long; ovary biloc-ular, the ovules about 15 in each locule, radiating from a short placenta on the central axis.—Known only from the type, *Krukoff 5045*, from the basin of the Rio Juruá, Amazonas, Brazil.

Peru (probably). Amazonian Brazil.

Eugenia cuspidifolia DC. Prodr. 3: 279. 1828.

A tree 6 meters high, the branchlets and young vegetative growth (sparsely) and the inflorescence (densely) appressed-pubescent with lustrous, rufous, partly dibrachiate hairs up to 0.5 mm. long; leaves sometimes trough-shaped, mostly glabrous, elliptic or elliptic-ovate, 2.5–3.5 cm. wide, 5–9 cm. long, about 2.3–3 times as long as wide, cuspidate-acuminate with linear blunt tips, acute to cuneate at base with the margins decurrent on the inner angles of the channeled petiole 1 mm. thick, 4–6 mm. long; midvein on upper surface with narrow elevated median ridge, prominent beneath; lateral veins 6–10 pairs, usually somewhat impressed above, prominulous beneath; marginal vein about equaling the laterals, arched between them, 2–6 mm. from margin, with an outer, weaker, submarginal vein connected to it by small veinlets at right angles; blades smooth, lustrous and dark above, dull reddish-brown and gland-dotted beneath; inflorescence an abbreviated axillary raceme (or several from the same axil), the axis 2–6 mm. long or less, with up to 5 approximate decussate pairs of flowers on slender but slightly compressed pedicels 0.5 mm. thick, 4–8 mm. long; bracts ovate, scarious, deciduous, about 1–1.5 mm. long; bracteoles 1–2 mm. long, persistent, ovate, pointed, not prolonged or fused at the basal margins; buds pyriform, 4.5–5 mm. long, the hypanthium urceolate, 2 mm. long, longitudinally ridged; calyx-lobes 4, oblong, hooded, 2 mm. wide, 3–3.5 mm. long, thickened near

the tips, the thickenings apparent in the bud; lobes imbricate, united about half their length in the bud, and at anthesis splitting nearly to the summit of the ovary and finally reflexed, glabrous within or with a very few appressed hairs; disk 2.5 mm. wide, hairy and with an annular thickening about the base of the style; style glabrous, 6–7 mm. long; stamens about 75, 6 mm. long, the anthers lanceolate, apiculate, 1–1.4 mm. long; petals ciliate, elliptic, 3 mm. wide, 5 mm. long; fruit unknown.—This species belongs to a group with hooded and partially or almost completely connate calyx-lobes, which, according to Amshoff (Rec. Trav. bot. neérl. 42: 21. 1949), and in Pulle (Flora of Suriname 3, pt. 2: 58, 105. 1951), should be segregated as the genus *Catinga* Aubl. Recent collections from the upper Amazon basin indicate that the species of this affinity are abundant there, and that their systematic positions are in need of study and clarification. The above description is based upon Peruvian material and in part upon the type specimen, collected by Martius on the Rio Negro. This species is apparently distinct from all related ones because of its considerably smaller flowers. F.M. Neg. 19932.

Loreto: Florida, Río Putumayo at mouth of Río Zubineta, *Klug 2132*. Amazonian Brazil. "Moifo-ey" (Huitoto, Klug).

Eugenia dibrachiata[1] McVaugh, Fieldiana Bot. 29: 207. 1956.

Tall forest tree, the inflorescence, petioles, and youngest growth sparingly to densely appressed-pubescent with lustrous rufous hairs up to 0.5 mm. long; dibrachiate hairs up to 0.5 mm. long numerous on the inflorescence and usually present in small numbers on the lower leaf-surface; leaves glabrous or with some appressed pale hairs, elliptic, 3–5.5 cm. wide, (6–) 8.5–14 cm. long, 2–3 times as long as wide, about equally rounded to the narrow acumen and the subcuneate base; margins decurrent on the petiole which is up to 1 mm. thick and 5–10 mm. long; blades pale green and smooth both sides, not evidently lustrous, not darkening in drying; upper surface sparingly and often obscurely impressed-punctate, the lower with inconspicuous raised dots; midvein prominent beneath, and also elevated in a narrow median ridge on the upper surface, the ridge often in a shallow channel; lateral veins inconspicuous, about 10–15 pairs; marginal vein 1–1.5 mm. from the margin, about equaling the laterals or a little smaller, often not continuous but broken when a lateral arches strongly and joins the next succeeding one; inflorescence an axillary raceme 3–6 cm. long, with 4–7 decussate pairs of

[1] Erroneously spelled "*dibranchiata*" in the original publication.

flowers, or seldom with the basal node (in the axil) bearing two short racemes; axis of raceme compressed, 1–1.5 mm. wide at the lowest node; pedicels stiff, divaricate, up to 0.6 mm. thick and 4–9 mm. long, the lower longer; bracts deciduous after anthesis, ovate, blunt-tipped, 1–1.5 mm. long; bracteoles ovate, as broad as long, round-tipped, sparingly strigose or merely ciliate, forming a cup 2.5–3 mm. long, persistent beneath the flower; calyx-lobes 4, broadly rounded, about 2 mm. long and 2.5 mm. wide, somewhat reflexed after anthesis, pubescent on both sides; disk 2.5–3 mm. wide, somewhat 4-angled, pubescent except the glabrous depressed center; style glabrous, about 7 mm. long; stamens 60–75, up to 10 mm. long; petals probably white, elliptic, 4.5 mm. long; ovary bilocular, the ovules 4 in each locule, collateral, pendent; fruit unknown.—The leaves suggest in color and texture those of *Eugenia florida*, but the marginal vein is more uniformly developed than in that species, which also is nearly glabrous. Univ. of Mich. Neg. 463.

Loreto: Caballo-Cocha, *Williams 2415*, *2416*, *2449* (type, F). La Victoria, *Williams 2934*. Leticia, *Williams 3145*.

Specimens suggesting intermediate stages between this species and *Eugenia florida* have been collected not far from the Peruvian border, near Palmares, Mun. São Paulo de Olivença, Brazil (*Krukoff 8322*), and at Zepelacio, near Moyobamba, San Martín, Peru, *Klug 3304*. These specimens have the pubescence, rather well-developed marginal vein, and floral characters nearly as in *E. dibrachiata* (except that the hypanthium is glabrous in Klug's collection), but the midvein is impressed on the upper leaf-surface as in *florida*, and the young leaves are scurfy-pubescent along the midvein.

Eugenia discors McVaugh, sp. nov.

Arbor vel frutex, racemis exceptis glaber, calyce hypanthioque dense pilis appressis sordidis obtectis; foliis rigide coriaceis, involutis, 7–16 cm. longis, breviter acuminatis; nervo medio supra impresso; venis utroque latere 10–15, supra convexis; racemis validis; pedicellis crassis, 3.5–6 mm. longis; calycis lobis 3.5–4.5 mm. longis latisque.

A shrub or tree with pale bark, glabrous as far as known except in the inflorescence; raceme axis minutely appressed-puberulent at least toward the apex, the pedicels and especially the hypanthium and calyx much more densely appressed-pubescent with grayish-white hairs up to about 0.3 mm. long; leaves rigidly coriaceous, elliptic or ovate, 4–10 cm. wide, 7–16 cm. long, 1.6–2.2 times as

long as wide, shortly acuminate, rounded to the base; margins strongly involute in dried specimens, acutely narrowed at base and decurrent on the inner angles of the short channeled petiole 1.7–2.7 mm. thick, 7–11 mm. long; midvein impressed above, prominent beneath; lateral veins 10–15 principal pairs with some intermediate ones, somewhat raised above when dry, scarcely apparent beneath; marginal vein about equaling the laterals and arched between them, 2–5 mm. from the margin; blades hard and glossy as if varnished above, dull and paler and nearly featureless beneath, obscurely gland-dotted; inflorescence an axillary or falsely terminal raceme 3–8 cm. long with 5–6 pairs of opposite and decussate flowers; axis of raceme compressed, up to 3 mm. wide just below the lowest node; pedicels 1 mm. thick or a little more, 3.5–6 mm. long, somewhat compressed; bracts not seen, deciduous before anthesis; bracteoles ovate, glabrous, about 2.5 mm. long and wide, not connate, together forming a persistent didymous boat-shaped involucre; buds 3.5–5 mm. long, obovoid, the broadly funnelform, densely pubescent hypanthium less than one-third the length of the entire bud; calyx-lobes 4, rounded, 3.5–4.5 mm. long and wide, densely pubescent both sides or the distal half glabrous without; disk about 4 mm. wide, pubescent; style 6–7 mm. long; stamens about 150, up to 8–9 mm. long, the anthers 0.6–0.7 mm. long; petals obovate, up to 7 mm. long, pubescent near the tip; ovary bilocular, the ovules 4 in each locule, collateral; fruit unknown.—Univ. of Mich. Neg. 1096.

San Martín: Lamas, *A. Mathews 1451* (K; herb. Hook., type; herb. Benth.).

Eugenia discreta McVaugh, Fieldiana Bot. 29: 208. 1956.

Tree 11 meters high, the inflorescence and young growth sparingly puberulent with minute appressed mostly dibrachiate hairs 0.2 mm. long, the foliage glabrescent; leaves oblanceolate, obovate, or on shoots elliptic, 5–8 cm. wide, 14–18 cm. long, 2.5–3 times as long as wide, shortly rounded to the decurved, acuminate tip, narrowed from the middle or above to the convexly acute base, the margins decurrent on the inner angles of the petiole 2 mm. thick, 6–10 mm. long; midvein impressed above, prominent beneath; lateral veins 10–15 pairs, elevated above, more prominent beneath, the marginal vein about equaling the laterals and angularly arched between them, 2–10 mm. from margin, a weaker submarginal vein 1–3 mm. from margin, connected to the inner vein in a series of oblong or angled elliptic areoles; blades above drying olive green, lustrous and very smooth except the raised reticulum of veins, the

raised glandular dots scarcely apparent at maturity; lower surface drying dull greenish brown, papillose, with small dark dots or these obscure at maturity; flowers in axillary umbel-like clusters, darkening in drying, the inflorescence an abbreviated raceme (or 2–3 racemes in each axil), bearing 2–3 approximate decussate pairs of flowers on slightly compressed pedicels up to 1 mm. wide, 5–10 mm. long; bracts broadly rounded or pointed, 1 mm. long; bracteoles broadly ovate, rounded to obtuse at tip, connate for about 0.5 mm. at base, persistent, 2.5 mm. long and wide; buds about 5 mm. long, pyriform; hypanthium campanulate, glabrous or nearly so, 2 mm. long; calyx-lobes unequal, oblong or suborbicular, 1.5–2 mm. wide, 1–2.5 mm. long; disk 2 mm. wide, glabrous; style 7–9 mm. long; stamens about 75, up to 7–9 mm. long, the anthers about 1 mm. long; petals white, elliptic, 2–3 mm. wide, 4.5 mm. long; ovary bilocular, the ovules about 15 in each locule, radially spreading from a short, centrally affixed placenta; fruit globose, 1 cm. in diameter (?immature), said to be yellow.—Univ. of Mich. Neg. 455.

Loreto: Gamitanacocha, Río Mazán, on river bank, Jan. 15, 1935, *J. M. Schunke 40* (US, type). Amazonian Brazil.

Eugenia dittocrepis Berg, in Mart. Fl. Bras. 14, pt. 1: 292. 1857. *E. congestissima* Diels, Verh. Bot. Ver. Brandenb. 48: 190. 1907.

A large shrub or small tree up to 5 meters high, with stout pale compressed branchlets, glabrous except the ciliate bracteoles and calyx-lobes; leaves elliptic or obovate, 3.5–6 cm. wide, 9–16 cm. long, 2.2–2.7 times as long as wide, acuminate, the tip small and deltoid or more slender, the base gradually rounded and finally cuneate, the margins decurrent on the stout but relatively long petiole 1.5–2 mm. thick, 10–15 mm. long; midvein flat or convex above, prominent beneath; lateral veins 10–15 pairs, somewhat elevated on both surfaces in drying, more conspicuous beneath; marginal vein 2–8 mm. from margin, somewhat arched between the laterals, with a network of small veins between it and the margin; leaves coriaceous, drying green above, pale or dark reddish-brown beneath, the glands inconspicuous; flowers in small clusters on old wood, the twigs often 3 mm. thick in the intervals between flowering nodes; inflorescence an axillary raceme, the axis much reduced, up to 1–2 mm. long, the flowers 1 or 2 decussate pairs; pedicels (in the type) slender, in bud 10 mm. long, less than 1 mm. thick, or (in fruit) 4 mm. long, 1.5 mm. thick; bracteoles persistent, appressed to the hypanthium, ovate, acute, 1.5 mm. long; bud (before calyx-lobes separate) 4 mm. long; calyx-lobes rounded, 2.5 mm. across, 2 mm.

long; fruit globose, about 1.5 cm. in diameter.—Under this name I have included glabrous plants with large coriaceous leaves not having the midvein impressed above, the flowers in short-pedicelled small axillary clusters, and the fruit probably globose. Other species in eastern Brazil (e.g. *Eugenia glomerata* Spring) are similar to the present one, and a revision of the group, in the light of much more material than is now available, is needed. The Peruvian specimens cited below are only doubtfully conspecific, and their relationships with the type, Poeppig's no. 3109, from Ega, Brazil, are similarly in doubt. F.M. Negs. 23528, 23536.

Loreto: Tarapoto, *Ule 6362*, type of *E. congestissima*. La Victoria, *Williams 2814*. Amazonian Brazil, Bolivia.

Eugenia egensis DC. Prodr. 3: 281. 1828. *E. egensis* γ *grandifolia* Berg, in Mart. Fl. Bras. 14, pt. 1: 296. 1857.

A shrub or small tree up to 10 meters high, completely glabrous except for the ciliate margins of the bracts, bracteoles and calyx-lobes and the hispidulous staminal disk (rarely the young vegetative parts sparingly pale rufous-strigose, as in *Williams 2614, 2794*), often darkening in drying; leaves (1.5–) 2–4 (–4.5) cm. wide, 6–10 (–12.5) cm. long, (2–) 2.5–3.5 times as long as wide, elliptic to ovate-lanceolate, prominently acuminate, rounded or cuneate at base and the margins somewhat decurrent on the stout channeled petiole 3–4 (–6) mm. long, about 1 mm. thick; midvein prominent beneath, sunken above but flat or channeled, not sharply impressed; lateral veins 10–15 pairs, slender, about equally apparent on both surfaces and slightly raised on both; marginal vein about equaling the laterals, slightly arched between them, 0.5–1.5 mm. from the margin; upper surface of blade dark and somewhat lustrous when dry, often appearing as if waxed, the glands usually not apparent in mature leaves; lower surface dull, usually pale yellowish brown when dry, with conspicuous abundant glandular dots, these often dark and somewhat raised; inflorescence a short axillary raceme (or occasionally 2 or 3 superposed racemes in a single axil), the axis somewhat 4-angled, (1–) 3–6 (–17) mm. long, with 4–6 (–8) opposite, decussate pairs of flowers; terminal flower usually aborting; pedicels filiform, straight, (5–) 8–12 (–22) mm. long, widely spreading; bracts somewhat persistent, rounded, ovate to reniform, broad-based and often nearly concealing the base of the pedicel, nearly 1 mm. wide and almost as long; bracteoles arising from the expanded end of the pedicel and hardly delimited from it, ovate to narrowly triangular, acute, often connate by the basal margins and forming a boat-shaped cup 1.5–2.5 mm. long

which persists until the pedicel falls; calyx-lobes 4, rounded, about 2 mm. wide and almost as long, reflexed after anthesis and spreading in fruit; disk flat, somewhat 4-angled, about 2 mm. wide, with glabrous center and minutely hispidulous staminal ring; style about 6 mm. long; stamens about 75, about 6 mm. long; petals white, elliptic, about 4 mm. long; fruit ellipsoid to subglobose, glandular-verruculose, up to about 10 mm. long, brown or black at maturity. —F.M. Neg. 19939.

San Martín: Rioja, 800–900 meters, *Weberbauer 4703* (USM).— Loreto: Iquitos, *Killip & Smith 27277*. Mishuyacu, near Iquitos, *Klug 1167*. Florida, mouth of Río Zubineta, *Klug 1992*. Yurimaguas, *Poeppig*, type of var. *grandifolia*. Gamitanacocha, Río Mazán, *Schunke 59*. Pongo de Manseriche, *Tessmann 3644*. Punchana, near Iquitos, *Williams 1339*. La Victoria, *Williams 2614, 2794*.— Junín: Huacapistana, 6,000 feet, *Sandeman 4438*. Guianas to Colombia, south to eastern Bolivia.

Eugenia ependytes McVaugh, sp. nov.

Arbor parva, pilis appressis pallidis, usque ad 1 mm. longis, praedita; foliis 5–10 cm. longis acuminatis, venis utroque latere circiter 10; nervo medio supra impresso; racemis 2–3 cm. longis tenuibus; calycis lobis 4 mm. longis, utrinque sericeis; bracteolis suborbicularibus, glabris, 5–6 mm. latis.

A small tree, the youngest twigs (sparingly) and the inflorescence (densely) covered with soft appressed evanescent yellowish- or brownish-white hairs up to 1 mm. long or more; leaves elliptic to oblong or ovate, 2.5–3.7 cm. wide, 5–10 cm. long, (2–) 2.5–3 times as long as wide, prominently acuminate, rounded or acute at base, the margins passing abruptly into the pubescent grooved petiole up to 1 mm. thick and 4–5 mm. long; midvein impressed above, prominent beneath; lateral veins about 10 pairs, indefinite in number with some intermediates, hardly apparent above, slightly elevated beneath when dry; marginal vein about equaling the laterals, somewhat arched between them, 1–2 mm. from the margin; blades apparently dull and nearly concolorous, obscurely if at all glandular-dotted; inflorescence an axillary or falsely terminal raceme 2–3 cm. long, with 2–4 pairs of opposite and decussate flowers; axis of raceme compressed, about 1 mm. wide just below the lowest node; pedicels 2–5 mm. long, shaggy-pubescent and appearing stout; bracts ovate-lanceolate, 1.5–2 mm. wide, 3–4.5 mm. long, pubescent without, glabrous within, acute, persistent through anthesis, the lower often

shorter and blunt or rounded at tip; bracteoles membranous, glabrous or essentially so, ciliate, finely gland-dotted, relatively enormous for the genus and so enveloping and concealing much of the bud (*ependytes*, an outer garment), but not connate, orbicular or wider than long, 5–6 mm. wide, 4–5 mm. long; buds about 5 mm. long, obovoid or subglobose; hypanthium broadly funnel-form, densely appressed-silky with hairs to 1 mm. long; calyx-lobes in unequal pairs, broadly rounded with the tips somewhat incurved in flower, appressed-silky on both surfaces, the outer (larger) pair 4–4.5 mm. wide, 3–4 mm. long, the inner pair 3 mm. wide, 4 mm. long; disk 4 mm. wide, glabrous except the inner margin of the staminal ring; style about 7 mm. long; stamens about 200, about 7 mm. long, the anthers 0.6–0.8 mm. long; petals suborbicular or obovate, about 7 mm. long, glabrous, gland-dotted, with laciniate margins; ovary bilocular, the ovules 12–15 in each locule, somewhat biseriate on a centrally affixed placenta; fruit unknown.—Univ. of Mich. Neg. 1097.

?Huánuco: Ganso Azul, Río Pachitea, 1500 ft. elevation, in partial shade, *C. Sandeman 3351*, Oct., 1942 (Herb. Kew, type), *3416* (Herb. Kew).

Eugenia feijoi Berg, in Mart. Fl. Bras. 14, pt. 1: 283. 1857. *E. pisonis* Berg, in Mart. l.c. 228. *E. costata* Berg, in Mart. l.c. 577. 1859. *E. diplocampta* Diels, Verh. Bot. Ver. Brandenb. 48: 191. 1907. *E. pleurosiphonea* Diels, l.c.

A shrub 5–10 meters high, or a tall tree, the branchlets, vegetative buds and young growth heavily strigose with straight lustrous coppery-red or pale-red hairs up to 1 mm. long, those on the lower leaf-surface at least sparingly persistent, sessile and mostly dibrachiate; hairs of the inflorescence closely appressed and often yellowish and somewhat matted; leaves elliptic-lanceolate, 3–5 cm. wide, 8–14 cm. long (on shoots up to 7 cm. wide, 16 cm. long), 2.5–3 times as long as wide, cuspidate-acuminate, the tip linear and blunt; base rounded or acute, the margins decurrent on the inner angles of the channeled petiole 1–1.5 mm. thick, 5–10 mm. long; midvein with narrow elevated median ridge above, pale strigose near base, prominent beneath; lateral veins 6–10 pairs, elevated but not prominent above, prominulous beneath, the basal ones sometimes strongly ascending, then diminishing distally and not joining the marginal vein, which at mid-leaf is weaker than the laterals and arched between them, 3–5 (–8) mm. from margin, usually with a weak submarginal vein connected to it by veinlets at right angles; blades above very smooth, lustrous, olive green or black when dry, without evident

glands; lower surface reddish (liver color), dull, dark-dotted; flowers appearing glomerate, in the axils on old wood, the inflorescence an abbreviated raceme 1–2 mm. long with 2–5 approximate decussate pairs of flowers on pedicels 0.6–1 mm. thick, 4–7 mm. long (or up to 1.5 mm. thick and 9 mm. long in fruit); bracts ovate, deciduous, about 1 mm. long; bracteoles narrowly or broadly ovate, persistent, scarcely or not at all connate at base, 1.5–2 mm. long; buds 6–9 mm. long, pyriform, with 4 terminal convexities corresponding to the thickenings of the calyx-lobes, the hypanthium campanulate, somewhat angled, 2.5 (–3) mm. long; calyx glabrescent without, glabrous within, the lobes salmon-pink (Killip and Smith), imbricated and connate in bud except 1–2 mm. at tip, at anthesis splitting to the disk or nearly so, and ultimately reflexed, 2.5–4 mm. wide, 3.5–5 mm. long (up to 5 mm. wide and 9 mm. long in fruit), hooded, convex-thickened near the tips but thin-margined and ciliate, the inner ones with scarious apical margins 1 mm. wide; disk 2.5–3 mm. wide, glabrous, the center elevated in an annular thickening about the style-base; style glabrous, 10 mm. long; stamens 150–175, somewhat shorter than the style, the anthers linear, 1–1.5 mm. long; petals glabrous, ciliate, 4–5 mm. wide, 8 mm. long; fruit broadly ellipsoid, or obovoid, 2–2.5 cm. in diameter, 2.5–3.5 cm. long; seed 1, ellipsoid, undivided.—It is possible that the correct name for this species is *Catinga aromatica* Aubl., as suggested by Amshoff (in Pulle, Flora of Suriname 3, pt. 2: 106. 1951). As noted by Amshoff, however, "The identification of Aublet's species is still doubtful." The type, a sterile specimen in the British Museum (Natural History), was examined by Amshoff, who stated that its identity was uncertain (Rec. Trav. bot. néerl. 42: 21. 1949). Miss Amshoff, however, in the Flora of Suriname, relegated *Eugenia pleurosiphonea* to the synonymy of *C. aromatica*. *Eugenia feijoi* seems to differ from the closely related *E. cuspidifolia* chiefly in the difference in size of the flowers, and perhaps study will show the two to be conspecific. The type of *E. feijoi* is in flower, whereas that of *E. pisonis* is in fruit, but the two agree so well in other characters that they seem surely to represent the same species. The type of *E. pisonis* was found by Berg among the Brazilian collections deposited at Munich by Martius; the type locality was unknown, but from the general morphology of the plant Berg assumed that it came from the Amazon region ("Brasilia, certe Najas"). Apparently he was correct in this assumption, for the specimen is very like a collection from near the mouth of the Rio Negro, Spruce no. 1325, or "Eugenia (13)," which Berg annotated as a new species with a name he seems never to have

published (*E. stictophylla*). References to fruit characters in the above descriptions have been drawn from the specimens collected by Martius and Spruce. F.M. Negs. 19941, 19981, 36940, 28349, 23576.

Loreto: Soledad, on Río Itaya, *Killip & Smith 29811*. Amazonian Brazil.

Eugenia flavescens DC. Prodr. 3: 272. 1828.

A shrub or tree to 10 meters high according to Amshoff, nearly glabrous, the vegetative buds, pedicels, bracts, bracteoles and calyx-lobes with few short cilia or with sparse minuscule erect hairs about 0.1 mm. long; foliage and flowers drying light yellow or the leaves yellow-green; leaves elliptic or obovate, 2–3 (–5) cm. wide, 5.5–8 (–13) cm. long, 2–3 times as long as wide, pointed at both ends, usually acuminate at tip, acute at base, the margins decurrent on the channeled petiole 1 mm. thick, 4–6 mm. long; midvein convex above and somewhat more prominently so beneath; lateral veins about 8 pairs, slightly elevated on both sides; marginal vein about equaling the laterals and arched between them, 1–3 mm. from margin; leaves smooth and lustrous above, paler beneath, with numerous elevated dots on both sides at least when young; inflorescence an abbreviated axillary raceme, the axis 1 mm. long or less, bearing usually 2 approximate decussate pairs of flowers on compressed pedicels about 0.7 mm. thick, 7–12 mm. long; flowers sometimes in opposite pairs from the lowest 1–3 nodes of a new leafy branch, subtended then by broadly rounded deciduous bracts 1 mm. long; bracteoles 1–1.5 mm. long, ascending, connate, acute, persistent; buds 4–5 mm. long, pyriform, the hypanthium campanulate, 1.5 mm. long; calyx-lobes unequal, ovate or suborbicular, imbricate, thin and thin-margined, 1.5–2 mm. wide, 1–1.5 mm. long; disk glabrous, about 2 mm. wide; style 7–8.5 mm. long; stamens about 75, 5–6 mm. long, the anthers 0.5 mm. long; petals suborbicular, white when fresh according to Amshoff, ciliate, 4 mm. wide, 5 mm. long; ovary bilocular, the cells about 15-ovulate; fruit (according to Amshoff) a berry, depressed-globose, black, striate, the embryo undivided.—Originally described from eastern Brazil (Bahia), this species is also known from the Guianas, from southeastern Bolivia (Santa Cruz), and as near to the Peruvian border as the falls of the Rio Madeira, Brazil. F.M. Neg. 19943.

Peru (probably).

Eugenia florida DC. Prodr. 3: 283. 1828. *E. atropunctata* Steud. Flora 26: 762. 1843. *E. gardneriana* Berg, in Mart. Fl. Bras. 14, pt. 1: 316. 1857. *E. oligoneura* Berg, l.c. 321.

Tree up to 15 meters high, nearly glabrous, the inflorescence and young growth, and sometimes the petioles and blades near the midnerve, finely pubescent. Hairs usually of several types, those of the racemes minuscule, abundant, the axis appearing prickly-hispidulous under a lens; hairs of the youngest parts often appressed, rufous, up to 0.3 mm. long; dibrachiate hairs probably always present, minute, often asymmetric, flaccid and collapsing and soon deciduous, usually much less abundant than other types. Leaves elliptic to ovate, often varying considerably on the same branch, the lower ones broader and more nearly ovate; blades mostly 3–5 (–8) cm. wide, 6–15 cm. long, usually 2–3 times as long as wide, acuminate at tip, rounded or subcuneate at base, the margins decurrent on the stout petiole 1–1.5 mm. thick, up to 5–7 mm. long; midvein flat or impressed above, prominent beneath; lateral veins 8–10 pairs, prominent beneath, impressed in delicate lines above, diminishing distally and strongly arcuate, the lower veins not ending in a definite marginal vein but each overarching about 2–5 (–10) mm. from the margin, approaching and ultimately joining the adjacent vein; lower leaf-surfaces dull green, usually without evident glands at maturity, the upper surface sparingly and minutely impressed-puncticulate; inflorescence axillary, 7–10 cm. long or less, or often longer, but then interrupted by leafy nodes, often twice compound, the individual racemes up to about 10, 8–10 (–20) flowered, the terminal flower usually aborting; pedicels 3–4 (–7) mm. long, widely spreading; bracts ciliate, persistent, ovate, acute, about 1 mm. long, partly enveloping the base of the pedicel; bracteoles similar, broader, persistent on the pedicel; hypanthium glabrous; calyx-lobes 4, rounded, 1–1.5 mm. long, 1.5 mm. wide, ciliate, abundantly strigose or silky within; disk flat, glabrous, 1.7–2 mm. wide; style 5–6 mm. long, glabrous; stamens about 60, about as long as the style; petals white, elliptic, 4–5 mm. long; fruit globose, verruculose, about 8–10 mm. in diameter.—F.M. Negs. 19944, 23513, 23544, 31595.

San Martín: Lamas, *Williams 6482*. Tarapoto, *Williams 5827*. —Loreto: Mishuyacu, *Klug 2571*. Muniches, *Poeppig 2353*, type of *E. oligoneura*. Santiago Mündung am Pongo de Manseriche, *Tessmann 4342*. Stromgebiet des Ucayali von 10° S. bis zur Mündung, *Tessmann 3230*. Timbuchi, Río Nanay, *Williams 984, 985*. Manfinfa, upper Río Nanay, *Williams 1145*. Caballo-Cocha on the

Amazon, *Williams 2487*. Yurimaguas, *Williams 4203, 4541, 4686, 4749*. Río Mazán near Iquitos, *Williams 8177*. Iquitos, *Sandeman 2259*. Bolivia and Amazonian Brazil, to the Guianas, Venezuela and northern Colombia (Sierra de Santa Marta). "Rupinia" (Williams).

Scarcely distinguishable plants, apparently with slightly more delicately veined leaves, very slightly smaller flowers and few or no dibrachiate hairs, occur in Central America. Similar small-flowered individuals, often nearly glabrous, occur also in Peru, and should perhaps be recognized nomenclaturally. In these the leaves are mostly 4.5–6.5 cm. long, the veins are inconspicuous and less distinctly impressed than those of typical *florida*, the inflorescence is usually 1.5–3 cm. long only, the disk about 1.5 mm. wide, the style 3–4.5 mm. long. Some individuals are completely glabrous, whereas others are pubescent almost exactly as in typical *florida*.

San Martín: Juanjuí, *Klug 3876*.—Loreto: Near Picaflor, *Tessmann 3182*.—Río Acre: Seringal Auristella, *Ule 9660*. Near mouth of Rio Macauhan, *Krukoff 5242*.—Locality uncertain: *"Pavon"* ex herb. Moricand (G). This latter specimen is labeled "Myrtus fragrans Peru," and, in another hand, "Pavon." The plant appears to be identical with a specimen in herb. Barbey-Boissier, the latter probably collected by Tafalla(?) and labeled "Fl. H[uayaquil.] descr. 10.7 1799." Both are probably from the same collection as a specimen in the British Museum which is labeled merely "Myrthus sp. nova" and in a later hand "Ruiz et Pavon." I should refer all these plants to this small-flowered, nearly glabrous representative of *Eugenia florida* which is discussed above, and I think it probable that all three came from Ecuador rather than from Peru.

Eugenia gomesiana Berg, in Mart. Fl. Bras. 14, pt. 1: 254. 1857.

Shrub or tree to 8 meters high, the branchlets, petioles, new growth and inflorescence densely hirsute-velutinous with coarse somewhat flexuous dark purplish-brown hairs up to 1 mm. long, the leaves with similar but paler hairs at least on the midvein beneath, and often along the midvein above; lower leaf-surface often with few or numerous shorter, paler and nearly erect hairs; leaves narrowly elliptic, 4–6.5 cm. wide, 15–24 cm. long, 3–3.5 times as long as wide, gradually acuminate, narrowed below the middle and acute or gradually rounded to the base, the margins shortly decurrent on the stout dark petiole 1.5–2 mm. thick, 6–8 mm. long; midvein above convex at least at base, distally with a narrow median channel, prominent beneath; lateral veins 10–15 pairs, slightly elevated above,

prominulous beneath; marginal vein about equaling the laterals or somewhat weaker, forming angular arches between them, 4–10 mm. from the margin, with a broad veiny zone between it and the margin; blades dark and lustrous, glabrous or glabrescent and smooth above, with very numerous small elevated dots when young; lower surface dull and paler, sometimes reddish brown in drying, the glands sometimes apparent, the surface under a strong lens appearing papillose-roughened and glistening; inflorescence an abbreviated axillary raceme, the axis quadrangular, 2 mm. thick, 3–4 (–7) mm. long, bearing 3–4 approximate decussate pairs of flowers on stout pedicels 1–1.5 mm. thick, 6–8 mm. long; bracts round or oblong, deciduous, 1.5 mm. wide, 1.5–2 mm. long; bracteoles subulate, 2–2.5 mm. long, deciduous at anthesis or thereafter; buds about 7 mm. long, subglobose; calyx-lobes unequal, glabrous inside, the shorter pair rounded, 2 mm. long, up to 3.5 mm. wide, the other pair oblong, 3.5–4.5 mm. long and about 3 mm. wide; disk 3–4 mm. wide; petals (according to Berg) orbicular, 6 mm. long; ovary (according to Berg) bilocular, multi-ovulate; fruit ellipsoid, 8–12 mm. in diameter, 15–20 mm. long, crowned by the incurved calyx-lobes; seed 1, ellipsoid, to 12 mm. long, undivided.—The type of this species is *Spruce 1163*, or, as Spruce labeled it in the field, "Eugenia (12)," in the Munich herbarium. Included under this number in some other herbaria are specimens of *Eugenia prosoneura* Berg, which has superficially similar leaves but very different pubescence. F.M. Neg. 19950.

Loreto: Iquitos, *Killip & Smith 27189*. Amazonian Brazil.

Eugenia heterochroma Diels, Verh. Bot. Ver. Brandenb. 48: 190. 1907.

A shrub or small tree to 8 meters high, the inflorescence and branchlets closely rufous-felted with extremely small crisped or scurfy hairs hardly more than 0.1 mm. long; leaves elliptic or oblong-lanceolate, 4.5–8 cm. wide, 12–19 cm. long, 2.5–3 times as long as wide, gradually or abruptly short-acuminate, rounded or acute at base, the margins abruptly decurrent on the inner angles of the dark channeled petiole 2–2.5 mm. thick, 6–8 mm. long; midvein flat or convex above, about 1 mm. wide at base, prominent beneath; lateral veins 12–15 pairs with some additional intermediate veins, a little elevated on both sides, more prominent beneath; marginal veins about equaling the laterals and arched beneath them, 3–5 mm. from margin; leaves smooth and lustrous above, greenish-brown in drying, the lower surface dull and tan color or rufous, sparingly and minutely pubescent but the hairs almost invisible on the loosely

cellular surface which under a lens sparkles by reflected light from the cell-facets; glands not apparent on mature leaves; inflorescence an abbreviated axillary raceme, solitary, or 2–3 from the same axil, the axis up to 1 cm. long and 1.5 mm. thick, somewhat 4-angled, with 1–4 decussate pairs of flowers on pedicels 1 mm. thick, 4–7 mm. long; bracts broadly ovate, sub-clasping, 2 mm. long; bracteoles nearly 2 mm. long, broadly ovate, fused by the basal margins into a persistent involucre beneath the bud; buds about 7 mm. long, pyriform, the campanulate hypanthium 3–4 mm. long; calyx-lobes nearly equal, obovate or elliptic, cucullate, sparingly appressed-pubescent within, about 5 mm. wide, 6 mm. long; disk 4 mm. wide, margined by the broad petal-scars, flat or concave, glabrous or slightly pubescent at center; style 10–11 mm. long, glabrous, enlarged and verruculose above the middle; stamens 200–250, up to 8 mm. long; anthers 1 mm. long; petals ovate, glabrous, about 9 mm. long; fruit narrowly ellipsoid, 8 mm. in diameter, 15–18 mm. long, rufous-puberulent, glandular-verruculose, the calyx-lobes subpersistent; seed 1, long-ellipsoid, undivided.—F.M. Neg. 23546.

Loreto: Iquitos, *Williams 8168*. Amazonian Brazil.

Eugenia hexovulata McVaugh, Fieldiana Bot. 29: 210. 1956.

Tree 15 meters high, the twigs, petioles, inflorescence and lower leaf-surface completely covered with dense closely appressed dibrachiate reddish-brown hairs up to 0.5 mm. long; leaves lanceolate-oblong, 5–7 cm. wide, 12–24 cm. long, (2.5–) 3–3.5 times as long as wide, acuminate at tip, rounded at base, the margins short-decurrent on the inner angles of the channeled petiole 2.5 mm. thick, 12 mm. long; midvein elevated above in a narrow median ridge, prominent beneath; lateral veins about 20 pairs in addition to some slender intermediate ones, somewhat elevated on both surfaces; marginal vein about equaling the laterals and slightly arched between them, 1–3 mm. from margin; blades smooth and lustrous above, without apparent glandular dots; lower surface obscured by the hairs; inflorescence umbel-like, the flowers in clusters up to 15 at nodes on old wood, on compressed pedicels 1 mm. wide, 8–20 mm. long; each cluster probably comprising 1–3 abbreviated racemes, each with an axis 1–3 mm. long, bearing 2–5 approximate decussate pairs of flowers; bracts ovate, 1–1.5 mm. long; bracteoles lanceolate, erect and appressed at the narrow apical margins of the pedicels, 1–1.5 mm. long; buds 6 mm. long, pyriform, closed at the tip and rounded or obscurely apiculate, the narrowly campanulate hypanthium 2–3 mm. long with about 8 longitudinal ridges; calyx glabrous inside, at an-

thesis splitting nearly to the disk into 4 nearly equal ovate pointed lobes 3 mm. wide, 5 mm. long, these finally spreading or the tips recurved; disk about 2 mm. wide, concave, glabrous, the staminal ring extending nearly to the depressed center; style 6–7 mm. long; stamens 100–125, about 5 mm. long, the anthers incurved in the bud, linear, 1–1.2 mm. long; petals 4, white, obovate, narrow-based, ciliate, 3 mm. wide, 5 mm. long; ovary bilocular, the ovules 3 in each locule, collateral, axile, the micropyle turned down.—A plant of somewhat questionable generic position. The small number of ovules is unusual but not unknown in the Eugeniinae. The characters of the inflorescence, bracteoles and pubescence, the angled hypanthium, the anthers and the broad staminal ring all suggest *Eugenia feijoi* and its relatives, but the venation is unlike that of *E. feijoi*. Univ. of Mich. Neg. 462.

Loreto: Pumayacu, between Balsapuerto and Moyobamba, 600–1200 meters, forest, Aug.–Sept., 1933, *G. Klug 3194* (F, type).

Eugenia illepida McVaugh, Fieldiana Bot. 29: 210. 1956.

Shrub or tree to 20 meters high, glabrous except the staminal ring and the ciliate bracteoles, calyx-lobes and petals; leaves oblanceolate or sometimes elliptic, 4–7.5 cm. wide, 12–26 cm. long, 3–3.5 times as long as wide, abruptly narrowed to the weakly deltoid-acuminate tip, narrowed from the middle or above to the convexly acute base, the margins decurrent on the obtuse inner angles of the scarcely channeled petiole 1–2 mm. thick, 8–10 mm. long; midvein flat above or broadly sulcate and somewhat impressed, prominent beneath; lateral veins 10–15 pairs, a little elevated on both sides; marginal vein about equaling the laterals, arched between them, 2–5 mm. from margins; leaves green above, smooth and lustrous, obscurely dotted or in age without apparent dots; lower surface yellow-green, paler, somewhat brown-dotted; flowers 4–6 together in clusters (abbreviated racemes) 3 mm. long, on old wood or in leafy axils; pedicels 1.5 mm. thick, 8–15 mm. long; bracteoles lanceolate, broad at base but not connate, acute, ascending, persistent, 2.5 mm. long; buds 10–12 mm. long, subglobose above the narrowly obconic hypanthium 3 mm. long; calyx-lobes broadly rounded, rigid, prominently gland-dotted and much imbricated, in very unequal pairs, the outer 7 mm. wide, 4 mm. long, the inner 14 mm. wide, 8 mm. long; disk about 6–7 mm. wide, hairy, the glabrous center 2 mm. wide; style 16–17 mm. long; stamens very numerous (about 300?), about as long as the style, the anthers 1–1.3 mm. long; petals somewhat fleshy, concave, broadly rounded, fimbriate-ciliate with fine

brownish hairs, about 15 mm. long and wide; ovary bilocular, the ovules about 30 in each locule, radiating from a short centrally attached placenta.—The type is *Krukoff 5675*, from near the mouth of Rio Macauhan, Acre, Brazil.

Peru (probably). Amazonian Brazil.

Eugenia inundata DC. Prodr. 3: 280. 1828. *E. inundata* α *membranacea* Berg, in Mart. Fl. Bras. 14, pt. 1: 318. 1857. *E. inundata* β *coriacea* Berg, in Mart. l.c. 319. *E. leptantha* Benth. in Hook. Journ. Bot. 2: 321. 1840.

A tree or shrub, the branchlets sparsely puberulent or hispidulous, the inflorescence and vegetative buds appressed-strigose with straight or crisped whitish hairs up to 0.5 mm. long, these especially dense and white on the hypanthium, the foliage glabrescent; leaves obovate, 0.6–2.3 cm. wide, 1.5–4 cm. long, (1.3–) 2–2.5 (–3) times as long as wide, the apex rounded or blunt-pointed to obscurely acuminate, the base cuneate, the margins decurrent on the inner angles of a petiolar base or a slender petiole up to 3 mm. long; midvein a little impressed above, prominent beneath; lateral veins 5–8 or 10 pairs, strongly ascending, scarcely apparent above, faintly visible beneath, scarcely forming a definite marginal vein, but a series of weak loops about 1 mm. from margin; blades drying dark or black above, dull and coarsely impressed-punctate; lower surface pale, reddish brown, dull, finely dark-dotted; inflorescence an axillary raceme (or reduced to 1–2 flowers and the axis then almost none), the axis 5–12 mm. long, somewhat compressed, usually less than 1 mm. wide, bearing 2–3 decussate pairs of flowers on ascending or spreading filiform pedicels up to 8–12 mm. long; bracts ovate, acute, 1 mm. long; bracteoles 1–1.5 mm. long and 1.5 mm. or more wide, connate by the basal margins, glabrescent and gland-dotted, persistent and explanate after flowering and then semicircular or obtusely pointed; buds 3–3.5 mm. long, the hypanthium campanulate, 1 mm. long; calyx-lobes gland-dotted, rounded, glabrescent without, sparingly appressed-pilose within, unequal, the larger ones 1 mm. long, 1.5 mm. wide; disk about 1.3 mm. wide, the center glabrous; style 4–5 mm. long; stamens about 30, 5–8 mm. long (often much longer than the style), the anthers 0.4 mm. long; petals elliptic, 2 mm. wide, 3–3.5 mm. long, ciliate; ovary bi- (or tri-?) locular, the ovules about 5 in each cell, collateral, the placenta central; fruit oblate, about 1 cm. in diameter, 1-seeded.—This species is well known on the upper Amazon as near to the borders of Peru as the vicinity of Ega, Brazil (*Poeppig 2729*, the type of var. *coriacea* Berg). The species is very

like *E. biflora* except for the shape of the leaves, and it is conceivable that some of the puzzling blunt-leaved forms of *E. biflora* (see p. 686) have arisen as a result of hybridization with *E. inundata*. F.M. Negs. 19955, 23550.

Loreto: Iquitos, *Tessmann 3691*. Amazonian Brazil and Colombia (Boca de Loreto-Yacu, *Schultes & Black 46–167*).

Eugenia jambos L. Sp. Pl. 470. 1753. *Jambosa vulgaris* DC. Prodr. 3: 286. 1828; Berg, Linnaea 27: 342. 1856. *Syzygium jambos* (L.) Alston, in Trimen, Fl. Ceylon (Suppl.) 6: 115. 1931.

A shrub or small tree, glabrous; leaves lanceolate or elliptic-lanceolate, mostly 3–5 cm. wide, 12–20 cm. long, 4–5 times as long as wide, long-tapering to the narrowly acuminate apex, subcuneate or gradually rounded at the base, the margins shortly decurrent on the stout petiole 1–2 mm. thick, about 1 cm. long; midvein impressed above, prominent beneath; lateral veins 10–15 pairs, slightly elevated both sides but more prominent beneath; marginal vein about equaling the laterals, very slightly arched between them, 2–5 mm. from margin, with a much fainter nerve very near the margin; upper surface drying pale or dark green, the lower usually greenish brown; glands scarcely apparent on either surface at maturity; inflorescence a terminal raceme up to 2.5 cm. long, the axis 4-angled, stout, 2–3 mm. thick, bearing 2–4 decussate pairs of flowers, the terminal flower usually abortive; flowers large, 7–8 cm. across the stamens; pedicels up to 1.5 cm. long, 1–1.5 mm. thick (2 mm. in fruit); bracts and bracteoles fugacious; hypanthium obconic, about 1.5 cm. long and 1 cm. across mouth, gradually narrowed to base and slightly contracted into a stout, poorly defined pseudostalk 2–3 mm. long;[1] calyx-lobes 4, persistent, concave, reflexed after anthesis, broadly rounded, the larger about 1 cm. wide at base, 6 mm. long; petals white, orbicular, gland-dotted, about 1.5 cm. broad and long; stamens very numerous (about 300) and conspicuous, up to 4 cm. long, creamy-white; anthers oblong, 1.2 mm. long; style 3.5–4 cm. long; fruit broadly depressed-globose, up to 6 cm. in diameter, 3–4 cm. long, rose-scented, pale yellow with pink flush; seed 1, about 2.5 cm. in diameter.—Widely cultivated in tropical countries for ornament. The fruits are edible.

[1] The majority of species of the Asiatic segregate genus *Syzygium* have the hypanthium narrowed abruptly or gradually to a slender pedicel-like base which is actually a part of the flower and not a pedicel. This is the pseudostalk (see Henderson in Gardens' Bull. Singapore 12: 12. 1949). When a pedicel is present the articulation between it and the pseudostalk is evident.

Cuzco: Quillabamba, *Soukup 136*. A native of southeastern Asia. "Poma rosa."

Eugenia limbosa Berg, Linnaea 27: 294. 1856. *E. cassapensis* Berg, l.c. 296. *E. maynensis* Berg, in Mart. Fl. Bras. 14, pt. 1: 318. 1857. *?E. casaretteana* Berg, l.c. 520. 1859.

Shrub or small tree up to 10 meters high, the inflorescence and young growth abundantly silky pubescent with appressed silvery-gray or yellowish hairs up to 0.7 mm. long. Leaves glabrous or essentially so at maturity, elliptic, narrowed about equally to the prominently and often caudately acuminate tip and to the subcuneate or rounded base, the margins decurrent on the petiole which is up to 1 mm. thick and 3–6 (–9) mm. long; blades 2–3.5 (–5) cm. wide, 5–8.5 (–11) cm. long, 2–2.7 times as long as wide; midvein impressed above, prominent beneath; lateral veins inconspicuous, 15–20 pairs; marginal vein about equaling the laterals, slightly arched between them, 1–1.5 mm. from the margin; upper surface darkening in drying, smooth, the lower dull, usually drying pale brown; glands usually not apparent in mature leaves, not impressed above; inflorescence a raceme (or sometimes 2 or 3 racemes superposed), up to 5 cm. long, with 10–16 flowers in decussate pairs, the axis 0.5 mm. thick at base, or flattened and then 1 mm. wide; pedicels straight, (3.5–) 6–10 mm. long, filiform (up to 0.5 mm. thick), widely spreading; bracts somewhat persistent, lanceolate, 1.5–2 mm. long; bracteoles ovate, 1–1.5 mm. long, persistent after the fruit falls; calyx-lobes 4, often 1.5 mm. wide and 2 mm. long with rounded tip, reflexed after anthesis, silky on both sides; disk flat, finely hairy, about 2 mm. wide; style glabrous, 5 mm. long; stamens about 75, 4 mm. long; petals white, elliptic, ciliate-fringed, 3.5–4 mm. long; fruit not seen fully mature, probably globose, about 8 mm. in diameter.—According to Berg *E. limbosa* differed from *E. maynensis* in having the leaves less narrowly acuminate and the branchlets compressed. In series of the original collections of *E. limbosa* (including some not seen by Berg), the leaf-tips vary from broadly acuminate in the younger leaves to almost caudate in some of the older ones. The branchlet character appears also to be variable and dependent to some extent upon the age of the branchlet. The collection by Isern is somewhat finely pubescent, and the dried, nearly mature fruits are 3–5 mm. in diameter and prominently 8-ridged in the manner of *Eugenia uniflora*. The other collections of *E. limbosa* which are available for study are all in bud or immature flower, and no ridges can be observed on the hypanthium in any specimen, but the collection by

Isern appears otherwise to be the same species. F.M. Negs. 31587, 36977, 31561, 19924.

San Martín: Entre Juanjuí y Tingo de Saposoa, *Ferreyra 4795*. Entre Bellavista y Baños, *Ferreyra 4743*.—Loreto: Yurimaguas, *Killip & Smith 27983, 27944, 28062, 29102; Poeppig 2375*, type of *E. maynensis*.—Huánuco: Est. Cueva Grande near Pozuzo, *4767*. Cassapi, *Poeppig 1276*, type of *E. cassapensis*.—Junín: Chanchamayo, *Isern 2238*.—Locality uncertain: *Ruiz*, type; *Ruiz & Pavón 19/50; Diehl 2434*. Bolivia; ?Amazonian Brazil.

Eugenia longicuspis McVaugh, Fieldiana Bot. 29: 211. 1956.

Tree 9 meters high, the branchlets, inflorescence, petioles and veins of the lower leaf-surface covered with appressed-ascending sordid, or yellowish- or reddish-brown hairs about 0.5 mm. long (up to about 1 mm. long on vegetative buds and at nodes); leaves obovate-oblong, 6–7 cm. wide, 18–21 cm. long, about 3 times as long as wide, abruptly rounded at the apex to a slender and narrowly pointed acumen 2–3 cm. long, narrowed from above the middle and acute at base, the margins decurrent on the inner angles of the channeled petiole 1.5 mm. thick, 10 mm. long; midvein narrowly impressed above, raised its own diameter beneath; lateral veins 8–12 pairs in addition to some intermediates, somewhat impressed above, prominent beneath; marginal vein about equaling the laterals, equally impressed above, nearly straight, 5–8 mm. from margin; leaves smooth, dark, dull and glabrous above, with no glandular dots apparent; lower surface paler, dull, strigose, minutely papillose, with hardly any dots apparent; inflorescence an axillary raceme 6–9 cm. long (sometimes 2 racemes superposed), the axis bearing 3–5 pairs of opposite or subopposite flowers on pedicels 1 mm. thick, 10–17 mm. long; bracts deciduous, divaricate, ovate, 3 mm. long; bracteoles broadly rounded or rhomboid, connate, persistent, 3 mm. long, the involucre 2.5 mm. high, 5 mm. wide; hypanthium campanulate, densely tawny-strigose, about 3 mm. long; calyx-lobes 4, nearly equal, suborbicular or oblong, rounded or subtruncate at apex, closely appressed-pubescent with pale hairs on the inner surface, about 4 mm. long and wide; disk about 6 mm. wide, pubescent, the center depressed, glabrous, 2 mm. wide; style not seen, probably about 9–10 mm. long; stamens more than 200, 7 mm. long or more, the anthers 0.6 mm. long; ovary bilocular, the ovules 7–8 in each locule, radiating and somewhat directed inward from the margin of a flat, centrally attached placenta.—The only known collection bears

flowers just past anthesis, from which the corolla, androecium and style have fallen. Univ. of Mich. Neg. 490.

A specimen which seems to be intermediate between this species and *Eugenia atroracemosa* is Williams' no. 4747, from Yurimaguas, Loreto, which bears immature buds and one raceme with half-grown fruits. This has the stout, short-pedicelled racemes, short-acuminate leaves, and non-connate bracteoles of *E. atroracemosa*, but the disk (6–7 mm. wide, glabrous at center), stamens (about 200) and style (9 mm. long) of *E. longicuspis*. The ovules are about 7 in each locule and collateral. This may represent a new species, but the material is imperfect and because of the resemblance of the flowers to those of *E. longicuspis* it is referred with doubt to that species. A second collection from near Iquitos, Williams' no. 8018, is perhaps also referable to this species, but the leaves tend to be elliptic and are not conspicuously caudate-acuminate, the upper surface is impressed-puncticulate, the pedicels are 5 mm. long and the disk is 4.5 mm. wide; the fruit, at maturity or nearly so, is subglobose, about 1.5 cm. in diameter.

Loreto: Mishuyacu, near Iquitos, alt. 100 meters, forest, Feb.–Mar., 1930, *G. Klug 855* (US, type).

Eugenia macrocalyx (Rusby) McVaugh, Fieldiana Bot. 29: 212. 1956. *Calycorectes macrocalyx* Rusby, Mem. N. Y. Bot. Gard. 7: 313. 1927.

A shrub 2–3 meters high, thinly strigose on branchlets, young leaves and inflorescence (densely so on vegetative buds and hypanthium) with appressed whitish hairs up to 0.5 mm. long; leaves elliptic to ovate, or obovate, 3–6 cm. wide, 9–18 cm. long, (2–) 2.5–3 times as long as wide, broadly or narrowly acuminate, the base rounded or acute, the margins decurrent on the petiole 1–1.3 mm. thick, 6–15 mm. long; midvein impressed above, prominent beneath; lateral veins about 10 pairs in addition to some intermediate ones, elevated a little but inconspicuous above, somewhat more evident beneath; marginal vein about equaling the laterals and arched between them, 2.5–5 mm. from margin; blades drying pale green, smooth and lustrous above, pale beneath with minute glistening particles on the surface; glandular dots few on both surfaces; inflorescence an abbreviated axillary raceme with the axis up to 1 cm. long, bearing about 3 pairs of flowers on compressed pedicels 0.5–1 mm. thick, 5–15 (–35) mm. long, or the raceme-axis elongate and leafy with only the lower 1–2 axils flower-bearing; bracts deciduous, sub-

ulate, strigose, 5 mm. long; bracteoles deciduous, subulate-filiform, strigose, 2–4 mm. long; hypanthium 2.5–4 mm. long in flower, obconic, often very narrowly so at base and abruptly expanded into the cuplike calyx; calyx-lobes foliaceous, erect, separated by broad rounded sinuses, unequal, in bud 2–2.5 mm. wide, 7–9 mm. long, after anthesis the smaller triangular, 5 mm. wide, 13 mm. long, the larger ovate, 7 mm. wide and 16 mm. long; disk glabrous, quadrangular, about 5 mm. across, with broad staminal ring; style 10 mm. long; stamens 100–150, up to 12 mm. long, the filaments yellow (Killip and Smith), the anthers 0.3 mm. long; petals obovate, apparently pale yellow, concave, 5–6 mm. long; ovary bilocular, the ovules about 12 in each locule, radially attached to a short placenta on the central axis; fruit oblong or pyriform, glandular-tuberculate, 2.5 cm. long.

Loreto: Balsapuerto, *Killip & Smith 28512, 28514, 28520, 28523*. Bolivia.

Eugenia macrophylla Berg, in Mart. Fl. Bras. 14, pt. 1: 268. 1857.

Shrub or tree up to 12 meters high, the young growth flocculent-tomentose with thin evanescent crisped pale brown hairs, at least a few usually persistent on the lower leaf-surface; axis of raceme, pedicels and hypanthium densely, and calyx and bracteoles moderately, loosely rufous-tomentose; leaves elliptic to oblanceolate, 5–8 cm. wide, 15–24 cm. long, usually 3 times as long as wide, gradually or abruptly short-acuminate, usually narrowed from the middle toward the base and there long-acute, the margins decurrent on the dark stout petiole 1.5–2 mm. thick, 10–15 mm. long; midvein above convex and 1 mm. wide at base or elevated in a narrow ridge, on the lower surface prominent and elevated about its own thickness; lateral veins 12–15 pairs, somewhat impressed above, elevated and prominent beneath; marginal vein definite and conspicuous, 3–8 mm. from margin, but the arches (loops) evidently formed of the diminishing tips of the lateral veins; blades above dark yellowish green, smooth and sub-vernicose, dull beneath and paler and somewhat appressed-pubescent; glandular dots small and numerous but often scarcely apparent in mature leaves; inflorescence an abbreviated axillary raceme, the stout axis mostly 1–2 mm. long, bearing 1–4 approximate, decussate pairs of flowers on stout pedicels 1 mm. thick, 2–4 mm. long; bracts early deciduous, subrotund, about 2 mm. long and wide; buds 5–9 mm. long, the broadly campanulate hypanthium 2 mm. long, mostly concealed by the involucre-like,

fused, ovate-rotund bracteoles, the individual bracteoles about 3 mm. long, scarious, thin and fragile, the margins fraying and splitting off even in the bud; calyx flaring in bud, much shorter than the narrow-based globe of petals, in texture like the bracteoles and similarly disintegrating, the lobes glabrous within, ciliate-fringed, somewhat unequal, the larger pair suborbicular, 3–4.5 mm. wide and long; disk 3 mm. wide, the staminal ring scurfy-puberulent, the center 1 mm. wide, densely pilose with erect reddish hairs up to 1 mm. long; style glabrous, 12 mm. long; stamens 250–300, up to 11–13 mm. long, the anthers 0.6 mm. long; petals obovate, ciliate, gland-dotted, glabrous, 6 mm. wide, 12 mm. long; ovary bilocular, with 25–30 ovules in each locule, radiating from a centrally affixed placenta.—The type locality was Ega, Brazil, on the upper Amazon, and this species is also known from the basin of the Rio Madeira, in the southern part of the state of Amazonas. F.M. Neg. 23558.

Peru (probably). Amazonian Brazil.

Eugenia malpighioides (HBK.) DC. Prodr. 3: 275. 1828. *Myrtus malpighioides* HBK. Nov. Gen. & Sp. 6: 146 (folio ed. p. 116). 1823.

A tree or shrub, the branchlets, petioles and inflorescence sparingly strigose with reddish hairs up to 0.5 mm. long; leaves ovate, up to 2–2.5 cm. wide, 4 cm. long, acute or obscurely and bluntly acuminate at tip, acute or obtuse at base, the margins passing abruptly into the petiole 1 mm. thick, 3 mm. long; midvein flat above, prominent beneath; lateral veins about 8 pairs, obscure above, slightly elevated but not prominent beneath; marginal vein about equaling the laterals and arched between them, 1.5–2 mm. from margin; blades dark, lustrous and smooth above, dull and gland-dotted beneath; flowers in axillary clusters, probably abbreviated axillary racemes, the axis very short, bearing 2–4 approximate decussate pairs of flowers on filiform pedicels 3–6 mm. long; buds 3 mm. long, pyriform; hypanthium campanulate, glabrous, 1 mm. long; bracts very short, probably deciduous; bracteoles about 1 mm. long or a little more, broadly ovate, blunt, rounded on back, the margins fimbriate, the basal margins approximate, not connate; calyx-lobes rounded, fringed, unequal, the larger 1 mm. long; disk about 1 mm. wide; style probably 4 mm. long; stamens 27–36 (Kunth), about 4 mm. long, the anthers 1 mm. long; petals elliptic, subciliate; ovary (Kunth) bilocular, the ovules 3–5 in each locule.—The type locality is given in the original publication as "ad ripam fluminis Amazonum," but the Bonpland specimen at Paris is labelled

"Marañon," and the locality was presumably near Jaen, on the Río Marañón. F.M. Neg. 36899.

The collection by Killip and Smith is referred to this species with some hesitation, because the pubescence of the inflorescence, leaves and branchlets is somewhat more abundant, and the veins in the leaves are more delicate than those of the type. The two collections agree well enough, however, in flower morphology and in the morphology of the coarse hairs of the petioles, as well as in more general features, to be regarded as conspecific. Certain collections with the pubescence and apparently the flower characters of *E. malpighioides* but the leaf shape of *E. egensis* are cited under that species (*Williams 2614, 2794*).

Cajamarca: "In Prov. Jaen de Bracamoros," *Bonpland*, type.—Ayacucho: Aina, between Huanta and Río Apurímac, 750–1000 meters alt., *Killip & Smith 22761*.

Eugenia mandonii McVaugh, Fieldiana Bot. 29: 212. 1956.

A tree or shrub, the branchlets and inflorescence strigose with stiff sordid hairs up to 0.5 mm. long, the foliage glabrate; leaves elliptic-ovate, 1–2 cm. wide, 2–4 cm. long, 2–3 times as long as wide, the tip blunt-pointed, acute or obscurely acuminate, the base acute, the margins cuneately decurrent on the petiole 1–1.5 mm. thick, 2–3 mm. long; midvein impressed above, prominent beneath; lateral veins 5–8 pairs in addition to some intermediate ones, slightly elevated on both sides but not very conspicuous; marginal vein weaker than the laterals and somewhat arched between them, 1 mm. from margin; blades vernicose above, rather dull beneath; both sides somewhat strigose and finely dark-dotted; flowers solitary and opposite from the 2 lowest nodes of new leafy branchlets (or the axis occasionally abortive and forming an abbreviated raceme), on slender compressed glabrous or sparingly strigose pedicels 1–1.5 mm. thick, 8–16 mm. long; bracts foliaceous and elliptic, up to 3 mm. wide, 6–8 mm. long, or much smaller and scarious, ovate, pointed, 1.5–2 mm. long; bracteoles subulate, 2 mm. long, white-strigose; buds 6 mm. long, obovate, the hypanthium densely white-strigose, broad-campanulate, 2.5 mm. long; calyx-lobes broadly rounded, glabrous and gland-dotted outside, thickly white-strigose within, about 3 mm. wide, 2.5 mm. long; disk 4–4.5 mm. wide, hirsute, the depressed center with some hairs about the style-base; style 6.5–9 mm. long; stamens about 200, up to 10 mm. long, the anthers 0.4–0.5 mm. long; petals suborbicular, glabrous, fringed, 5 mm. long;

ovary bilocular, the ovules about 15 in each locule, radiating from a short centrally affixed placenta.—Univ. of Mich. Neg. 438.

Peru (probably). Northern Bolivia (*Mandon 634*, type).

Eugenia micranthoides McVaugh, Fieldiana Bot. 29: 212. 1956.

A shrub or small tree, minutely pubescent, the branchlets and inflorescence densely beset with sharp slender erect pale hairs about 0.1 mm. long; similar hairs occur on the petioles and sparingly on the leaf margins and the principal veins; leaves elliptic, 2–2.5 cm. wide, 4–7 cm. long, 2–3 times as long as wide, about equally narrowed to a narrow and often subcaudate acumen 1–1.5 cm. long, and to the rounded and finally subcuneate base, the margins decurrent on the straight petiole about 3 mm. long; midvein impressed-sulcate above except at tip, prominent beneath; lateral veins about 10 pairs, slender, obscure on both surfaces, the marginal vein about equaling the laterals and often somewhat arched between them, mostly 1 mm. or less from margin; leaves dull, drying pale green and without evident glands above, liver-brown and minutely dark-glandular beneath; inflorescence an axillary raceme, or twin racemes superposed, the axis reddish-hairy, up to 8 mm. long, or only 1–2 mm. long in flower, somewhat compressed below the nodes, with 2–5 decussate pairs of flowers, the terminal flower usually abortive; pedicels 2–4 mm. long, somewhat compressed, up to 0.5 mm. wide; bracts deciduous; bracteoles ovate, acute, persistent, 0.6 mm. long; disk about 2 mm. wide, the staminal ring hairy; calyx-lobes broadly rounded, unequal, the larger 1.5 mm. wide, 1 mm. long; style 4.5–5 mm. long, glabrous; stamens about 50, 5 mm. long, the anthers 0.5 mm. long; petals suborbicular, 2.5 mm. long; ovary bilocular, the ovules 6 in each locule, radiating from a short, centrally affixed placenta; fruit not seen.—Superficially like *Eugenia micrantha* (HBK.) DC. (*Myrtus micrantha* HBK.) in many respects, and strikingly similar to that species in characters of pubescence and morphology of the inflorescence. In *E. micrantha*, however, the leaves are narrower, prominently veined and glandular, the midvein is not impressed above, the flowers are smaller, and the bracts are persistent. The type locality of *E. micrantha* is near Honda in the Magdalena Valley of Colombia, but a note at the end of the original description (HBK. Nov. Gen. & Sp. 6: 115 [folio]. 1823) says: "Bonplandius haec specimina in Peruvia lecta esse memorat." Apparently this reference to Peru is erroneous, for the species is well known

in Colombia but has not subsequently been found in Peru. Univ. of Mich. Neg. 468.

Loreto: Yurimaguas, Parana Pura, in forest, Oct.–Nov., 1929, *Williams 4620* (F, type), *Williams 3825, 4102.*

Eugenia multirimosa McVaugh, Fieldiana Bot. 29: 213. 1956.

A shrub or small tree; young branchlets not seen, the older twigs with reddish thin bark separating in longitudinal strips; inflorescence closely puberulent with minute crisped pale reddish-brown hairs; leaves nearly sessile, oblanceolate to elliptic, 7–11 cm. wide, probably 25–?35 cm. long, 3–3.5 times as long as wide, the tips short-acuminate, the blade attenuate from the middle or above to near the base, where 2–3 cm. wide and then abruptly rounded and cordate-auriculate, the auricles nearly equaling the petiole; petiole 3–5 mm. long but appearing much longer from below, enlarged and corky-shedding and appearing 4–5 mm. thick, the enlarged portion 10–15 mm. long and extending well below the blade; midvein impressed above, prominent beneath; lateral veins about 15 pairs in addition to some intermediates, impressed but the veins themselves convex, prominent beneath; marginal vein about equaling the laterals and but slightly arched between them, nearly straight, at the middle of the leaf 5–10 mm. from the margin, with an outer smaller submarginal vein 1–3 mm. from the margin and connected to the inner vein by numerous small veins at right angles; blades green and lustrous, smooth above, the lower surface somewhat appressed-pubescent, gray-green and minutely papillose; dots not apparent in mature leaves; inflorescence an abbreviated axillary raceme on old wood (or several racemes from a single axil), the axis 1.5 mm. thick, 2–4 mm. long, bearing about 3 approximate decussate pairs of flowers on pedicels 0.5–1 mm. thick (up to 2 mm. thick in fruit, and corky like the petioles), 8–11 mm. long; bracts deciduous, ovate-triangular, 2 mm. wide, 4 mm. long; bracteoles persistent, ovate, pointed, about 1.5 mm. long, the basal margins not fused or very shortly so; hypanthium at anthesis urceolate, broad-based, 3 mm. long; calyx-lobes sparingly strigose within, suborbicular, unequal, the larger 4.5–5 mm. wide, 4–5 mm. long; disk 3.5–4.5 mm. wide, the central glabrous part 1.5 mm. wide, the staminal ring broad and conspicuous, 1.5 mm. wide, the stamens thus probably very numerous (ca. 300?); fruit said to be orange (immature?), ellipsoid, about 2 cm. in diameter, 3 cm. long, the seed 1, undivided.—Univ. of Mich. Neg. 491.

Loreto: Yurimaguas, lower Río Huallaga, alt. ca. 135 meters, dense forest, Aug. 23–Sept. 7, 1929, *Killip & Smith 29019* (US, type); Yurimaguas, *Killip & Smith 28020;* Timbuchi, *Williams 1017.*

Eugenia myrobalana DC. Prodr. 3: 277. 1828. *E. corymbosa* Berg, Linnaea 31: 256. ?1862.

Tree up to 10 meters high, nearly glabrous, but the inflorescence appressed-pubescent to tomentulose with stiff rufous or pale red hairs up to 0.5 mm. long, and the lower leaf-surface very minutely and closely appressed-pubescent with colorless lustrous hairs; leaves obovate to elliptic, 9–13 cm. wide, 23–33 cm. long, 2.3–3 times as long as wide, rather abruptly narrowed at tip to a small pointed acumen, gradually narrowed toward base from the middle or above and finally abruptly rounded into the stout dark petiole 2–4 mm. thick, 10–18 mm. long; principal veins sulcate above, but the veins proper flat or slightly convex, all prominent beneath; lateral veins 9–12 pairs, strongly ascending, diminishing distally and losing their identity in small veins connecting to the next succeeding laterals; leaves browning in drying, smooth, dark and obscurely glandular above, lustrous grayish-brown beneath from the close covering of hairs, these nearly concealing the few dark glands; flowers borne on the twigs at leafless nodes, the inflorescence consisting of a tapering and somewhat 4-angled axis 1–2 cm. long (or sometimes 2 or 3 from the same node), bearing 6–8 decussate pairs of flowers on compressed slender pedicels 1.2–2.5 cm. long and 1.5 mm. wide at summit; bracts deciduous at anthesis, linear or elliptic, 2–2.5 mm. wide, 6 mm. long; buds globose, about 8 mm. in diameter, closely subtended and enveloped by the bracteoles which are concave and broadly rounded, obovate, 8–10 mm. long and 6 mm. wide, their narrow bases surrounding the summit of the pedicel like a collar but deciduous at anthesis; hypanthium in anthesis obconic, broad-based, soon much elongating and narrowly ellipsoid; calyx-lobes broadly triangular to oblong, blunt-tipped, glabrous on the inner surface, 3–6 mm. wide, 4–6 mm. long, soon reflexed after opening; disk 4.5–5 mm. wide, glabrous or nearly so at the center; style 8–9 mm. long, glabrous; stamens about 150, 5–6 mm. long; anthers 1 mm. long; petals broadly obovate, 7–8 mm. long; fruit ellipsoid, crowned with the persistent calyx-lobes, 1.3–1.7 cm. thick, 2.5–3 cm. long.—F.M. Neg. 19971, Univ. of Mich. Neg. 488.

San Martín: Pongo de Cainarachi, *Klug 2666.* Tarapoto, *Spruce 4902,* type of *E. corymbosa.*—Loreto: Balsapuerto, *Klug 3039.* Yuri-

maguas, *Williams 5263, 5340.* Amazonian Brazil. "Sacha caymitillo" (Williams).

Eugenia nigra DC. Prodr. 3: 268. 1828.

A small tree, glabrous or nearly so, the leaves very stiff and coriaceous, elliptic-oblong, often trough-like and the upper side folded in when dried, 5–6.5 cm. wide, 10–15 cm. long, the tip shortly deltoid-acuminate (acumen 3–5 mm. long), the base rounded to a very short petiole (in the type specimen) or the petiole 2 mm. thick, 12 mm. long; midvein concave above, prominent beneath; lateral veins 12–20 pairs, inconspicuous and sometimes somewhat elevated above, very inconspicuous and scarcely elevated beneath; marginal vein about equaling the laterals and arched between them, 3–5 mm. from the margin, a weaker submarginal vein 1–2 mm. from the margin; blades drying green or quite black above, smooth, lustrous, and impressed-puncticulate, the lower surface dull reddish brown and quite featureless; inflorescence an abbreviated axillary raceme, the axis up to 4–5 mm. long or much less, the few flowers subsessile, the pedicels 2 mm. long (or in fruit 1.5 mm. thick, 4 mm. long); bracteoles about 0.7 mm. long, ascending and appressed to the bud, connate and forming a narrow, notched, persistent involucre; buds 5 mm. long, the hypanthium pyriform, ridged, 2 mm. long, the short rounded calyx-lobes ciliate, much shorter than the globe of the petals; fruit probably oblong, about 1 cm. long.—This species is known with certainty only from the type, which was collected by Martius near Ega, Brazil. A recent collection from Bolivia, near the Peruvian border, however, seems to be conspecific (*Baldwin no. 2976a,* above Buena Vista, Río Pacahuaris, Terr. Colonia, June 27, 1943). Also included in *Eugenia nigra* in the present treatment (but not in the description) are one other Bolivian collection and two Peruvian ones which may well represent three different species of which more material is needed for study before formal classification and description. All agree with *E. nigra* in having large, long-petiolate leaves, nearly sessile clustered flowers which are glabrous, but with longer styles (10 mm. long or more) and more elongate hypanthia than in the group of *Eugenia tapacumensis* and its allies. They differ, however, as follows: *Baldwin 2976,* collected with his *2976a,* has thinner, veiny-reticulate leaves and about 15 ovules in each locule; *Williams 1099,* from Manfinfa, Loreto, Peru, has longer, pointed leaves, pedicels almost none, calyx-lobes 3 mm. long, stamens 125–150, and about 8 ovules in each locule; *Killip & Smith 28704,* from Yurimaguas, Loreto, Peru, has blunt veiny leaves with strong marginal

vein 8–10 mm. from margin, the hypanthium short, stamens 50–75, and about 20 ovules in each locule. F.M. Neg. 19975.

Peru (probably). Amazonian Brazil.

Eugenia ochrophloea Diels, Verh. Bot. Ver. Brandenb. 48: 189. 1907.

Shrub 2–6 meters high, glabrous except the ciliate margins of the perianth lobes, bracts and bracteoles, and the pubescent staminal ring; leaves ovate, 4–6 cm. wide, 10–12 cm. long, about twice as long as wide, the tip gradually deltoid-acuminate, decurved, the base rounded, the margins passing abruptly into the inner obtuse angles of the flat summit of the petiole 2 mm. thick, 4 mm. long; midvein flat above or shallowly sulcate near the base, prominent beneath; lateral veins about 10 pairs, narrowly and obscurely elevated above, prominulous beneath; marginal vein about equaling the laterals and arched between them, 2–4 mm. from margin; leaves smooth and dark green above, with few or no glands apparent; lower surface dull, paler, finely dark-dotted; inflorescence an abbreviated axillary raceme, or 2 racemes superposed, the axis 1 mm. thick, quadrangular, 2–4 mm. long, bearing 2–4 (–8) approximate, decussate pairs of flowers on nearly terete pedicels 0.5 mm. thick, 3.5–8 mm. long; bracts subpersistent, broadly ovate, pointed or rounded, 1 mm. long; bracteoles ovate, pointed, narrowed at base, not connate, 1 mm. long and wide; buds 4 mm. long, pyriform; hypanthium short-campanulate, rounded at base, 1–1.5 mm. long; calyx-lobes broadly rounded, unequal, the smaller 1 mm. long, 1.5–2 mm. wide, the larger 1.5–2 mm. long, 2–2.5 mm. wide; disk 2–2.5 mm. wide, the staminal ring hairy; style 5 mm. long; stamens about 75, about 5 mm. long, the anthers 0.7 mm. long; petals obovate, ciliate, 3.5 mm. wide, 4–4.5 mm. long; ovary bilocular, the ovules about 12 in each locule, radially attached to the centrally affixed placenta.—This is one of a group of species which have in common the nearly glabrous herbage and inflorescence, the flowers small, in sessile axillary clusters, the midrib flat or convex on the upper leaf-surface, and the fruit as far as known globose. *Eugenia dittocrepis* Berg differs superficially from the present species in its much longer petioles (10–15 mm.). *E. protracta* Berg, Linnaea 31: 254. ?1862, from the upper Rio Negro, was based on Spruce's no. 3816. This appears to be identical with *E. ochrophloea* except that the leaves are somewhat smaller, drying black, eglandular beneath, with flat and caudate-acuminate tips. The little-known *E. malpighioides*, described from northern Peru, is

pubescent, the leaves are small and ovate, and the flowers much smaller. F.M. Neg. 23566, Univ. of Mich. Neg. 432.

Loreto: Tarapoto, *Ule 6454*, type.

Eugenia origanoides Berg, Linnaea 29: 229. 1858.

Tree or shrub, usually densely tawny-hirsutulous on branchlets and inflorescence, and somewhat less densely on the lower leaf-surfaces, with erect or curved lustrous hairs about 0.5–1.0 mm. long; leaves elliptic, 2–5 cm. wide, 4–10 cm. long, 2–3 times as long as wide, abruptly or gradually narrowed to the pointed or somewhat bluntly acuminate tip, narrowed and rounded at base, the margins passing abruptly into the sulcate hirsute petiole 1–2 mm. thick (including the hairs), 3–4 mm. long; midvein impressed and persistently hirsutulous above, prominent beneath; lateral veins about 10 pairs with some intermediate veins almost as strong, slightly elevated in drying but inconspicuous above, evident beneath, nearly straight and passing directly into the marginal vein, which is about as strong as the laterals and arched between them, 2.5–5 (–8) mm. from the margin with a smaller, submarginal vein between it and the margin; blades dark in drying, strigose above and non-glandular, paler beneath and finely dark-dotted; flowers closely glomerate, the inflorescence a group of abbreviated axillary racemes; axis of each raceme up to 4 (–7) mm. long, bearing up to 5 approximate and decussate pairs of flowers on pedicels 1–1.5 mm. long or less; bracts rounded-deltoid, about 0.7 mm. long and wide, glabrous on the inner surface, the outer thickly velutinous with hairs 0.5 mm. long; bracteoles persistent, narrowly ovate, acute, setose like the bracts, 0.5–1 mm. long; hypanthium subglobose, about 1.3 mm. long and wide, sparingly pilose; calyx-lobes 4, membranous, glabrous or sparingly setose, long-ciliate, gland-dotted, rounded-ovate, about as long as the hypanthium, 1 mm. wide and 1.3 mm. long; disk flat, glabrous or hairy at the center, about 1.3 mm. wide; style 6–6.5 mm. long; stamens about 35–50, up to 5–6 mm. long, the anthers 0.2–0.4 mm. long; petals obovate, glabrous, 2.5 mm. wide, 4 mm. long; ovary bilocular, the ovules about 10 in each locule, radially attached to a short placenta near the center of the central partition; fruit not seen.

"Peru," *Maclean* ["*McLean*"] (Herb. Kew, ex herb. Hook.).

This species probably does not occur in Peru. It ranges from eastern Mexico to Colombia. It has not been collected extensively except in Central America. The extent of its range in Colombia is not well known. According to Amshoff (Ann. Mo. Bot. Gard. 45:

181. 1958) it is one of the two most common species of *Eugenia* in Panama, and probably occurs in all provinces of that country. It seems likely that a specimen from Panama, or elsewhere in Central America, may have been mixed accidentally with Peruvian specimens obtained by Maclean.

John Maclean was a merchant, a long-time resident of Lima, who corresponded with Hooker and who sent a number of his own collections to Kew. He worked with Andrew Mathews and other Peruvian collectors. It appears from the records at Kew that Maclean made a number of trips between Europe and South America. His collections are usually without definite locality data, which would suggest that he kept no systematic records but held plants from various localities until some quantity had accumulated, and then bundled up and sent or carried them to England. It is possible that he himself obtained a specimen of *Eugenia origanoides* in Central America on one of his trips and failed to note the source of the specimen. I am indebted to Mr. N. Y. Sandwith for notes on the Maclean correspondence at Kew.

Eugenia patrisii Vahl, Ecl. Amer. 2: 35. 1798. *E. inocarpa* DC. Prodr. 3: 264. 1828. *E. vellozii* Berg, in Mart. Fl. Bras. 14, pt. 1: 255. 1857. *E. teffensis* Berg, in Mart. l.c. *Stenocalyx patrisii* (Vahl) Berg, Linnaea 29: 247. 1858.

A shrub or small tree 6–7 meters high, or perhaps to 20 meters, the branchlets more or less crisped-puberulent or loosely hairy with reddish hairs up to 0.5 mm. long; vegetative buds and sometimes young shoots and bracts strigose with appressed reddish silky hairs; leaves glabrous or nearly so, a few long hairs sometimes persisting on the lower surface, and the midvein above often short-hairy; leaves elliptic to obovate or ovate, variable in size on the same plant, the leaves at flowering time often 2–4 cm. wide, 4–6 cm. long, the mature leaves up to 5–7 cm. wide, 8–12 (–16) cm. long, mostly 2–2.5 times as long as wide, narrowly and gradually or abruptly acuminate at tip, cuneate at base, or narrowed and abruptly rounded to the stout petiole 1–1.5 mm. thick, 3–4 (–6) mm. long; midvein plane above, or in the central part of the leaf raised in a thin line, prominent beneath; lateral veins 5–8 pairs, widely spaced, prominent beneath, flat above or depressed below the surface in furrows; marginal vein conspicuously arched and relatively far (3–8 mm., or 6–12 mm. in the larger leaves) from the margin; lower pair of lateral veins usually not joining the main marginal vein, but continuing into a weak secondary marginal vein about one-third the distance

from the margin to the main vein; leaves smooth, minutely gland-dotted on both sides, usually drying brown, the upper surface lustrous and often darkening, the lower dull, light rusty brown; flowers on long filiform and conspicuously bracteate pedicels, in short axillary racemes or at the lowest nodes of new leafy shoots; axis of raceme up to 1.5 mm. thick, 4–5 mm. long, with 4–5 decussate pairs of flowers and the terminal bud abortive, or the flowers apparently lateral and solitary on the shoots; pedicels (1.5–) 2–3 cm. long, terete or somewhat compressed and then about 0.5 mm. wide, glabrous or sparingly and loosely hairy, usually with scattered elevated glandular dots; bracts loosely imbricated in 4 ranks at the bases of racemes and new shoots, mostly deciduous after anthesis, those subtending pedicels mostly narrowly ovate, acute, 1–2.5 mm. wide at base, 1.5–7 mm. long, hairy or rarely glabrous; bracteoles at the base of the obconic hypanthium, deciduous at anthesis, linear, ciliate, about 1.5 mm. long; buds glabrous, 4–5 mm. long before the petals unfold; calyx-lobes rounded, ciliate, glabrous on both sides, about 2 mm. wide, 1.5 mm. long; style glabrous or somewhat hairy, 6–8 (–11) mm. long; stamens about 100, to 8 mm. long, the anthers 0.6 mm. long; petals white, obovate, ciliate, 4 mm. wide, 10 mm. long; fruit (according to Amshoff) globose to pear-shaped, red, juicy, edible, 1.5–2 cm. in diameter.—In Peru there occur plants which have two different leaf-types but are otherwise closely similar and probably conspecific. In the type of *Eugenia patrisii* the leaves are relatively small (mostly 6–8 cm. long) and tend to be cuneate at the base. The type of *E. inocarpa* DC. has leaves of this kind, and so apparently do most plants in the Guianas and Venezuela. In eastern Colombia, Amazonian Brazil and Peru certain plants have somewhat larger leaves with stouter petioles, the blades narrowed and finally abruptly rounded, rather than cuneate, at base; this is *E. vellozii* Berg, which perhaps should be distinguished as a variety or subspecies, but hardly merits recognition as an independent species. F.M. Negs. 7948, 19954, 20016, 23014.

Loreto: Mishuyacu, *Klug 318*. Iquitos to Pongo de Manseriche, *Tessmann 3635*. Bolivia and Amazonian Brazil to the Guianas.

Eugenia percincta McVaugh, Fieldiana Bot. 29: 214. 1956.

A tree or shrub, the branchlets, petioles, inflorescence, veins of the lower leaf-surface and midvein of the upper, velutinous with lustrous erect or appressed reddish-brown coarse curved hairs up to 1 mm. long, the lower surface of the leaves between the veins with numerous similar hairs but the surface not obscured; leaves broadly

elliptic-oblong, 6–8.5 cm. wide, 12–14 cm. long, 1.6–2 times as long as wide, about equally narrowed to both ends, deltoid acuminate, the base obtuse, the margins abruptly joining the flat hirsute summit of the stout petiole 2 mm. thick, 10 mm. long; midvein flat or broadly channeled above, prominent beneath; lateral veins 8–10 pairs, elevated above, prominent beneath; marginal vein about equaling the laterals and strongly arched between them, 3–8 mm. from margin, mostly apparent in the distal half of the blade only, the lowest 1–2 veins diminishing distally and running irregularly into the next succeeding ones; blade with conspicuous cartilaginous glabrous margin (as seen on the upper surface) formed by a heavy convex vein about twice as thick as the lateral veins; upper surface of blade smooth and lustrous, somewhat reticulate-veined, without apparent glands; lower surface paler and minutely papillose, with at least a few glandular dots; inflorescence an abbreviated axillary raceme, the axis almost none, bearing 2 approximate and decussate pairs of flowers on pedicels 1–1.5 mm. thick, 5 mm. long; bracts lanceolate, deciduous, glabrous on the upper surface, 1.5 mm. wide, 3.5–5 mm. long; bracteoles similar; hypanthium nearly hemispheric, about 2 mm. high; calyx-lobes rounded, velutinous both sides, about 5–6 mm. long and wide; disk 4–4.5 mm. wide, hairy, the center 1.5 mm. wide, red-hirsute; style glabrous, 14–16 mm. long; stamens about 150, about as long as the style; anthers 0.7–0.8 mm. long; petals ciliate-fringed, glabrous inside, partly hairy outside, about 7 mm. wide, 10 mm. long; ovary bilocular, the ovules 15–18 in each locule, radially attached to a short placenta on the central axis.—Known only from the type, *Rusby 2084*, collected at the falls of the Rio Madeira, Brazil. Univ. of Mich. Neg. 453.

Peru (probably). Amazonian Brazil.

Eugenia polyadena Berg, Linnaea 31: 258. ?1862.

Shrub or tree, nearly glabrous, strigose in the inflorescence with grayish-white closely appressed hairs up to 0.5 mm. long; bracts, bracteoles and calyx-lobes glabrous but ciliate; leaves elliptic to obovate, 3–6 cm. wide, 6–15 cm. long, 2–2.5 times as long as wide, short-acuminate at apex or broadly rounded and the acumen obsolete, rounded to subcuneate at base, the margins decurrent on the stout petiole 1.5 mm. thick, 5–10 mm. long; leaves obscurely veined, the midvein slightly impressed above, prominently raised beneath; lateral veins 10–15 pairs, very slender, slightly raised beneath, the marginal vein about equaling the laterals and arched between them, 2–4 mm. from the margin in the larger leaves; blades brown in dry-

ing, the upper surface dark, smooth, with some elevated glandular dots, the lower surface reddish brown, thickly and prominently or sparingly dark-dotted; inflorescence a stout axillary raceme (or 2 racemes superposed), 3–6 cm. long, the axis compressed, 2–2.5 mm. wide below the first node; flowering nodes 4–5, the terminal flower abortive; pedicels 5–7 mm. long (up to 14 mm. long in fruit); bracts broadly ovate, pointed, persistent, 2 mm. long; bracteoles ovate, joined and forming a cup-like involucre 1.5–2 mm. high and 4 mm. long, enveloping the base of the glabrous, broadly cup-shaped hypanthium; calyx-lobes broadly rounded, 5 mm. wide, 4 mm. long, minutely strigose on the inner surface; disk 4 mm. wide, glabrous; style glabrous, 8 mm. long; petals obovate, 8 mm. long; stamens up to about 9 mm. long, very numerous (250–300), the anthers 0.8 mm. long; fruit globose, about 1.5 cm. in diameter.—Williams' no. 6894 is in bud only. It seems strange that this very distinctive species has not been more adequately collected in such a relatively well-botanized part of Peru, where the original collections were made by Spruce a century ago. I know no species resembling it elsewhere in the Amazon drainage, but it is morphologically very similar to *E. pustulescens* McVaugh, from the coastal lowlands of northern Ecuador. Univ. of Mich. Neg. 480.

San Martín: Tarapoto, *Spruce 4479*, type; *Spruce 4557; Mathews 1447*. Juan Guerra, near Tarapoto, *Williams 6894*.

Eugenia prosoneura Berg, Linnaea 31: 255. ?1862.

A shrub or tree up to 7–15 meters high, the branchlets, young growth and inflorescence heavily pubescent with appressed silvery white or pale yellowish or reddish straight or partly crisped hairs up to 0.5 mm. long or a little more, the leaves glabrescent or hairs persisting on the midvein above and short erect hairs sometimes occurring in abundance on the lower surface; leaves oblong to elliptic, 3–8 cm. wide, 8–24 cm. long, 2.5–3 times as long as wide, narrowed about equally to both ends, the tip blunt-pointed or short-acuminate, the base rounded, its margins abruptly and shortly decurrent on the flat summit of the stout dark petiole 1.5–2.5 mm. thick, 6–12 mm. long; midvein flat above or narrowly channeled, prominent beneath; lateral veins about 10 (–15) pairs, slightly elevated on both sides, the marginal vein about equaling the laterals and arched between them, 3–6 (–12) mm. from the margin, a distinct but smaller submarginal vein beyond it; leaves above dark green and smooth, the lower surface paler and dull, both thickly beset with small elevated glands when very young but these obscure in age; inflorescence an

abbreviated axillary raceme, the axis 2 mm. thick, up to 5 (rarely to 20) mm. long, with up to 6 decussate and usually approximate pairs of flowers on slender pedicels 0.5–1 mm. thick, 6–10 (–20) mm. long; bracts glabrous, scarious and deciduous, suborbicular or a little elongate, cucullate, 1.5–2 mm. wide and up to 2.5 mm. long; bracteoles subulate, deciduous at anthesis, hairy or sometimes glabrescent, 1.5–2.5 (–5) mm. long; buds 5–8 mm. long, the narrowly campanulate hypanthium 2–3.5 mm. long, densely and closely white hairy; calyx-lobes broadly rounded, ciliate, nearly glabrous inside but with some appressed hairs, in unequal pairs, all about 3 mm. wide, the larger ones 3.5–4.5 mm. long, the smaller 2–3.5 mm.; disk 2.5–3 mm. wide, concave, the broad staminal ring hairy, the center glabrous or nearly so and convex; style above the convex base glabrous, (10–) 12–15 mm. long; stamens about 200, about as long as the style, the anthers 0.7 mm. long; petals glabrous, obovate or elliptic, 5–6 mm. wide, 9–12 mm. long; ovary bilocular, the ovules about 20 in each locule, radially affixed to a central placenta; fruit not seen.—Univ. of Mich. Neg. 481.

Loreto: Mishuyacu, *Klug 1190*. Amazonian Brazil.

Eugenia punicifolia (HBK.) DC. Prodr. 3: 267 (as *punicaefolia*). 1828. *Myrtus punicaefolia* HBK. Nov. Gen. & Sp. 6: 149 (folio ed. p. 118). 1823. *M. oleaefolia* HBK. l.c. 147 (folio ed. p. 117). *E. oleaefolia* (HBK.) DC. l.c. 270. *E. coarensis* DC. l.c. 267. *E. dipoda* DC. l.c. 268. *E. vaga* Berg, Linnaea 27: 166. 1856. *E. vaga α punicaefolia* (HBK.) Berg, in Mart. Fl. Bras. 14, pt. 1: 238. 1857. *E. vaga δ brasiliensis* Berg, in Mart. l.c.

A shrub, often 1–2 meters tall, or a small tree up to 5 meters, nearly glabrous, the branchlets, bracts and vegetative buds, and sometimes the young foliage, pubescent with erect or often appressed lustrous rufous hairs up to 0.3 mm. long; leaves obovate, oblanceolate or elliptic, 1–3 cm. wide, 3–6 cm. long (or up to 9 cm. on shoots), mostly 2–2.5 times as long as wide, the apex rounded, blunt, retuse or less often broadly short-acuminate, the base cuneate, or subcuneate with the sides somewhat rounded, the margins usually thickened and evidently involute, decurrent on the stout petiolar base which is about 1 mm. thick, 2–5 mm. long; midvein prominent beneath, flat or channeled above and often markedly pubescent; lateral veins 10–12 pairs, slightly raised and about equally apparent above and below; marginal vein about equaling the laterals and arched between them, proportionately far from the margin (1–2.5 mm.), and usually with a second, more delicate and imperfectly developed vein parallel

to it and between it and the margin; glandular dots usually apparent on both surfaces but not conspicuous on either; inflorescence actually racemose (occasionally producing 4 flowers in 2 decussate pairs), but the axis ordinarily not elongating, producing 2 flowers only, one at each side of the axillary bud; pedicels slender, up to about 0.5 mm. thick, 4–10 (–20) mm. long, erect in flower, spreading or drooping in fruit; bract 1 at the base of each pedicel, closely appressed-pubescent, oblong, 1–1.5 mm. long; bracteoles lanceolate, about 1 mm. long, ciliate, persisting on the pedicel after the fruit falls; calyx-lobes 4, rounded, concave, ciliate, reflexed after anthesis, mostly incurved in fruit, 1.5–2 mm. wide and long, or up to 3 mm. wide and 2.5 mm. long in fruit; disk flat, about 2 mm. wide, the center glabrous, the staminal ring hispidulous; style about 5 mm. long, glabrous; stamens 60–75, about as long as the style; anthers 1–1.2 mm. long; petals white, about 4–5 mm. long; fruit ellipsoid, smooth, up to about 8 mm. thick, 13 mm. long, red or yellow according to Amshoff.—F.M. Negs. 7940, 19926, 20015, 36900, 36902.

San Martín: Ricuricocha, *Woytkowski* (USM 15508). Tarapoto, *Williams 5428, 5797, 6295, 6508.* San Roque, 1350–1500 meters, *Williams 7319.*—Cajamarca: Ad ripam fluminis Marañón, Prov. Jaen de Bracamoros, *Bonpland,* type of *Myrtus oleaefolia.* "Urcu-Rupiña" (Williams). West Indies; South America east of the Andes, south to southern Brazil and southern Bolivia.

Eugenia uninervia Rusby, based on Bang's no. 1602, from Guanai, Bolivia, is a species closely related to *E. punicifolia* but with the leaves narrow and elongate, tapering to both ends, 1–2 cm. wide and 5–8 cm. long, the lateral and marginal veins inconspicuous. So far as known it has not been found in Peru.

Eugenia pustulescens McVaugh, Fieldiana Bot. 29: 215. 1956.

Tree or shrub, the branchlets, inflorescence and young growth more or less densely strigose with lustrous appressed reddish-brown partly dibrachiate hairs up to 0.5 mm. long, usually with numerous shorter erect hairs intermixed; inflorescence branches, bracts, bracteoles and flowers bearing very many dark raised rounded glands; leaves elliptic, 3–4 cm. wide, 7–9 cm. long, 2–2.7 times as long as wide, the tips deflexed and short-acuminate, the base acute, the margins decurrent on the channeled petiole 1–1.5 mm. thick, 3–6 mm. long; midvein impressed above, prominent beneath; lateral veins about 10 pairs, scarcely visible above, elevated but inconspicuous beneath; marginal vein about equaling the laterals and arched be-

tween them, 1–4 mm. from margin; blades dull green above, rough and much pitted with openings of varying sizes; lower surface paler, dull, yellow-or reddish-brown, with hardly any glandular dots; inflorescence an axillary raceme up to 6 cm. long, the peduncle to 1.5 cm. long, the flowers in 4–9 decussate pairs on pedicels 1 mm. thick, 3 mm. long or less; bracts deltoid-ovate, acute, broad at base, rounded on the back, 2 mm. long; bracteoles broadly rounded, 1–1.5 mm. long, somewhat connate by the basal margins, forming an involucre about 2.5 mm. long; buds 5 mm. long, obovate, the hypanthium broadly conic, 1.5–2 mm. long, closely strigose near base; calyx-lobes broadly rounded or subtruncate, appressed-hairy inside, unequal, the smaller 3 mm. wide, 1.7 mm. long, the larger 2.5–3.5 mm. wide, 2–2.5 mm. long; disk about 3.5 mm. wide, glabrous; style 5–6 mm. long; stamens about 100, about as long as the style, the anthers about 0.7 mm. long; petals glabrous but ciliate, concave, 3–3.5 mm. wide, 4.5–5 mm. long; ovary bilocular, the ovules about 12 in each locule, radiating from a short placenta affixed to the central axis.—Univ. of Mich. Neg. 461. This species, as far as definitely known, is confined to the Pacific slope of northern Ecuador. A specimen at Geneva, from the Moricand herbarium, however, is labelled "Eugenia sp. nova, Peru," and in another hand "Pavon." This specimen is probably one of a considerable series which Moricand received from Pavón in 1827, and which included plants from various parts of America, collected in part by Pavón himself and in part by others. The source of this particular specimen cannot now be ascertained, but it seems probable from its morphology, from the state of its preservation and from its degree of maturity that it forms a part of an Ecuadorian collection which is attributed to Tafalla. If so, the species may justifiably be excluded from the known flora of Peru (see Fieldiana Bot. 29: 216. 1956).

Peru (reported). Coastal Ecuador.

Eugenia quadrijuga McVaugh, Fieldiana Bot. 29: 216. 1956.

A shrub or tree up to 15 meters high, the branchlets, youngest leaves and inflorescence more or less appressed-pubescent with small sordid, partly flaccid and fusiform dibrachiate hairs about 0.2 mm. long, or up to 0.5 mm. long especially near nodes and on buds; leaves elliptic, 2–3 (–6) cm. wide, 7–9 (–11) cm. long, (2–) 2.3–3.5 times as long as wide, bluntly and often obscurely acuminate, convexly acute at base, the margins decurrent on the inner angles of the petiole 1–1.5 mm. thick, 5–7 mm. long; midvein impressed above, prominent beneath; lateral veins about 10 pairs in addition to some intermedi-

ates, elevated a little on both sides, prominulous beneath; marginal vein about equaling the laterals, arched between them, 2–4 (–8) mm. from the margin, the submarginal vein present and conspicuous, but weaker; blades dark green, smooth, and lustrous above, somewhat roughened by the small elevated reticulate veins; lower surface dull, paler green; glandular dots almost wanting or (in *Klug 3153*) abundant beneath; inflorescence an abbreviated axillary raceme (or 2–3 racemes from the same axil), the axis up to 2 mm. long, bearing 1–4 pairs of flowers on slender compressed pedicels 0.5–0.7 mm. wide, 4–10 mm. long; buds 4.5–5 mm. long, pyriform, the hypanthium campanulate, glabrous, drying dark, 2 mm. long; bracts broadly rounded, deciduous, less than 1 mm. long; bracteoles somewhat elongate, ascending under the hypanthium, ciliate, not connate, 1.5 mm. long and about 1 mm. wide, persistent; calyx-lobes rounded or longer than wide, glabrous inside, ciliate, drying pale green, the smaller 2 mm. wide, 1.5 mm. long, the larger 2.5 mm. wide, 2.5–3 mm. long; disk (1.5–) 2.5 mm. wide, the staminal ring hairy; style (6–) 7–8 mm. long; stamens 60–75, about as long as the style, the anthers 0.6–0.8 mm. long; fruit globose or pyriform, probably about 1 cm. in diameter; ovary bilocular, with 15–20 ovules in each cell, radially attached to the centrally affixed placenta.—Peruvian species related to *Eugenia schomburgkii* and *E. tapacumensis* are poorly represented in herbaria and are consequently difficult to interpret taxonomically. This group may be characterized as those having small slender-pedicellate glabrous flowers in axillary "glomerules" or "fascicles" (actually very short racemes), nearly glabrous foliage, the midvein impressed above, and the marginal vein relatively far from the margin with a distinct submarginal vein beyond it, the fruit globose and 1 cm. in diameter or less. The species include *E. schomburgkii* Benth., *E. tapacumensis* Berg, *E. maculata* Berg, and two newly proposed species, *E. discreta* and *E. quadrijuga*. A species of Amazonian Brazil, *E. agathopoda* Diels, Verh. Bot. Ver. Brandenb. 48: 192. 1907, is similar but has larger flowers, longer racemes and longer pedicels. Because of the small amount of material available for study, no really workable key to these can be constructed. The flowers of all the species are so similar that they provide no really diagnostic characters, and the fruits are almost entirely unknown from herbarium specimens. In the present treatment, *Eugenia schomburgkii* includes chiefly glabrous or nearly glabrous plants with lanceolate and long-pointed leaves very smooth on the upper surface. *E. maculata* is distinguished from broad-leaved extremes of *E. schomburgkii* (and from the other species here discussed) by its

raceme axis, which is up to 5 mm. long. *Eugenia tapacumensis* is a plant with subcoriaceous, elliptic, bluntly pointed leaves and rather fine inconspicuous veins. *Eugenia discreta*, known only from the type, has mostly oblanceolate and rather large, reticulate-veined leaves and sparse, appressed, dibrachiate hairs in the inflorescence. The remaining species, *E. quadrijuga*, is described from four collections which may represent one species, or conceivably as many as four. The collections agree very well in most characters but differ in leaf-shape from long-elliptic (as in *Ule 9661*, which suggests *E. schomburgkii*) to broadly elliptic (as in *Klug 3153*, which suggests *E. tapacumensis*). The pubescence differs slightly in all the cited collections, but the best distinguishing feature of the species lies in the numerous bristly ascending short hairs of the pedicels. Univ. of Mich. Neg. 456.

Loreto: Pumayacu, between Balsapuerto and Moyobamba, *Klug 3153*.—Río Acre: Near mouth of Rio Macauhan, *Krukoff 5415, 5594* (US, type). Seringal São Francisco, *Ule 9661*.

Eugenia quebradensis McVaugh, Fieldiana Bot. 29: 217. 1956.

A tree or shrub, the inflorescence, young twigs and lower surface of the young leaves tomentose with tough crisped sordid white or brown hairs up to 0.7 mm. long (on buds and youngest branchlets to 1 mm. long and straight); leaves rigidly coriaceous, lanceolate, 0.8–1.5 cm. wide, 5.5–7.5 cm. long, 5–6 times as long as wide, acute at tip, rounded at base, the margins abruptly contracted to the very stout petiole 1.5 mm. thick, 4 mm. long; midvein impressed above, elevated and prominent beneath; lateral veins 10–12 pairs sunken in trough-like depressions on the upper surface (at least near the midrib), prominent beneath; marginal vein about equaling the laterals, and slightly or prominently arched between them, inconspicuous, less than 1 mm. from the strongly inrolled leaf-margin, which is marked by a stout cartilaginous vein; blades at maturity dull and glabrous above, siliceous-verruculose beneath; glands small, apparent in immature leaves only; flowers at leafless axils in sessile bracteate clusters of 4 (–6?) flowers each, the axis probably 4-angled, 1–2 mm. long; bracts lanceolate, 2 mm. long; bracteoles not seen; hypanthium sessile, cup-shaped, narrowed to an acute base, 4–5 mm. long and wide, with 4 strong wing-like angles extending from near the base to just below the calyx-lobes; calyx-lobes broadly rounded, glabrous near base within, in unequal imbricate pairs, the inner pair thin-edged, 5–6 mm. wide, 3.5 mm. long, the outer pair 4 mm. wide, 3 mm. long; disk copiously short-hairy, 4-angled, about 6 mm. across,

the broad convex staminal ring 2 mm. wide; style glabrous, stout, more than 5 (probably 10–15) mm. long; stamens about 300, 6 (–10?) mm. long; anthers broadly elliptic, 0.6 mm. long and about as wide; petals not seen; ovary bilocular, the ovules about 15 in each locule, descending, arising along a somewhat elongate slender placenta attached near the top of the locule.—U. S. Nat. Mus. Neg. 4466.

Lambayeque: Prov. Chiclayo, quebrada del Río Saña, monte seco, Dec., 1928, *N. Esposto* (USM, type).

Eugenia racemiflora Berg, Linnaea 27: 232. 1856. *Psidium emarginatum* R. & P. Fl. Peruv. & Chil. 4: *t. 419*, ined. (?1802); G. Don, Gen. Hist. 2: 833. 1832. *P. emarginatum* Ruiz, hb. flor. Peruv. no. 152, ex Berg, l.c. 233. Not *Eugenia? emarginata* (HBK.) DC., 1828.

Tree or shrub, the young branchlets and leaves and the inflorescence densely ferruginous-tomentose; leaves rigidly coriaceous, glabrous or nearly so at maturity, elliptic-ovate, 3–5.2 cm. wide, 5.5–7 cm. long, the tips rounded or retuse or very shortly and obtusely acuminate, the base rounded or obtuse, the margins abruptly decurrent on the petiole 4–5 mm. long; midvein impressed above, prominent beneath; lateral veins about 6–8 pairs, slightly elevated but inconspicuous above, not very prominent beneath, the marginal vein about equaling the laterals and arched between them, 3–5 mm. from margin; blades discolorous, darker and glabrous above, rusty-brown and dark-dotted beneath; flowers solitary at the lowest 1–3 nodes of new leafy shoots, or the inflorescence a stout raceme 2 cm. long, the axis up to 2 mm. thick (including tomentum), bearing up to 4 decussate pairs of flowers on pedicels up to 1.5 mm. thick, 7 mm. long; bracts small, or sometimes foliaceous; bracteoles oblong, tomentose on both sides, 2 mm. long; buds 6 mm. long, pyriform; hypanthium campanulate, 2.5–3 mm. long; calyx-lobes unequal, broadly rounded or obtusely pointed, tomentose on both sides, about 3 mm. long and wide; disk hairy, about 4 mm. wide; style 8 mm. long or more, red-hairy below the middle; petals obovate, hairy on the back, 8 mm. long; stamens probably 150–200 or more, up to 10 mm. long; anthers 0.5 mm. long; ovary bilocular, many-ovulate.—Description compiled from the original one by Berg, from a photograph (F.M. Neg. 29479) of the Ruiz specimen of no. 152 at Madrid, and from a fragment of this specimen (herb. F).

Junín: Vitoc ("Vitos"), *Ruiz*, type, in herb. Berol., not seen.

Eugenia riparia DC. Prodr. 3: 283. 1828. *?Eugenia rypdocarpa* Ruiz & Pavón, Fl. Peruv. & Chil. 4: *t. 416*, ined. (?1802). *?E. muricata* DC. l.c. *?E. verruculosa* DC. l.c. 284. *?E. rutidocarpa* R. & P. ex G. Don, Gen. Hist. 2: 865. 1832. *E. lugens* Berg, Linnaea 27: 299. 1856. *?E. rugosa* Ruiz ex Berg, l.c. 300. *E. amazonica* Berg, in Mart. Fl. Bras. 14, pt. 1: 322. 1857. *E. fenzliana* Berg, in Mart. l.c. 323. *E. racemifera* Berg, in Mart. l.c. 322. *E. schlechtendaliana* Berg, in Mart. l.c. 321. *E. calothyrsa* Diels, Verh. Bot. Ver. Brandenb. 48: 189. 1907.

A tree up to 15 meters or more in height, the inflorescence and young growth crowded with appressed-ascending, lustrous, often flexuous yellowish to gray or dark brown hairs up to more than 0.5 mm. long, some of the hairs dibrachiate; leaves mostly glabrous above at maturity, more or less densely beset on the lower surface with closely appressed dull colorless hairs 0.1–0.2 mm. long, sometimes with a few darker lustrous hairs intermixed; blades elliptic or oblong-elliptic, rounded about equally to the acuminate tip and to the base, (3–) 4–6 (–8.5) cm. wide, (8–) 12–17 (–21) cm. long, 2–3 (–3.5) times as long as wide, the margins decurrent on the stout petiole up to 2 mm. thick, 6–9 (–12) mm. long; midvein impressed above, prominent beneath; principal lateral veins 15–20 pairs, slender and not always clearly distinguished from the intermediate pairs, not very conspicuous on either surface; upper surface dark when dry and somewhat lustrous, usually impressed-puncticulate; lower surface dull, drying pale or rusty brown, often gland-dotted when young but the glands rarely apparent at maturity; inflorescence an axillary raceme mostly 8–12 cm. long with 6–12 pairs of opposite (or subopposite) and decussate flowers; axis of raceme often flattened and 1–2 mm. wide at the lowest nodes; lowermost node (in the axil of the leaf) often bearing two short racemes in addition to the primary one, and the upper nodes occasionally raceme-bearing or with 2 or 3 flowers in a cluster; pedicels up to 8–12 mm. long and 1 mm. thick, the lower longer and often flexuous, the upper often much shorter (2–4 mm. long) and stiffly spreading; bracts lanceolate, 1–2 mm. long, usually deciduous before anthesis; bracteoles ovate, about 1.5 mm. wide and long, united at base into a persistent involucre-like cup; buds about 4 mm. long; calyx-lobes 4, rounded, silky both sides, 2.5–3 mm. long and wide, spreading and somewhat reflexed after anthesis; disk with depressed center, somewhat 4-angled, 2.5–3 mm. wide, somewhat pubescent among the stamens, the center with a few appressed yellowish hairs; style glabrous, 5–8 mm. long; stamens

more than 100, up to 10 mm. long; petals elliptic, 4–6 mm. long; fruit subglobose or pear-shaped, about 1.5 cm. long.—The specific limits of *Eugenia riparia* are poorly understood, and it is possible that several species are involved instead of the one recognized here. The oldest name for any species in this group is apparently *E. polystachya* Rich. (Act. Soc. Hist. Nat. Paris 1: 110. 1792); this particular plant was described from French Guiana, but may prove to be identical with *E. riparia*, of which the type came from Brazilian Amazonia.

Mature fruits, in the group which includes *E. riparia* and its relatives, may be smooth or nearly so, as in *E. schlechtendaliana;* they may have 8 longitudinal ridges, as in Killip and Smith's no. 29259; or they may be muricate or verruculose. Fruiting specimens are rarely collected, and even more rarely are they identified with flowering specimens from the same plant. On the basis of the rather numerous flowering specimens that have been available for study I have been quite unable to see any consistent indication that more than a single species is represented. Fruiting specimens, moreover, agree so well with flowering material, and with one another, except in the characters of the fruit itself, that I venture to suggest that the apparently diverse fruit types represent manifestations of one and the same species. Much field study may be necessary to resolve these problems.

The warty-fruited types all appear to belong to the same natural population, which may or may not be specifically different from the smooth-fruited one. The oldest names for warty-fruited species are the doubtfully published *E. rypdocarpa* (?1802) (which was properly published, as *E. rutidocarpa*, in 1832), and *E. muricata* and *E. verruculosa* (both 1828). In *E. verruculosa*, a plant known only from the type, the warty projections on the fruit are small and uniformly distributed, about 10 per 4 square mm. In the other species mentioned, and also in *E. rugosa*, the fruit is more coarsely warty, with projections which may be 1–2 mm. high and broad. If after further taxonomic study it appears that more than a single species is represented in this complex, the correct name for the Peruvian species with coarsely warty fruits would be *E. muricata* DC. unless it were ultimately decided that *E. rypdocarpa* R. & P. should be considered as validly published. The few known collections of *E. muricata* and *E. rugosa* are cited below with those referred to *E. riparia*. These are indistinguishable except by the muricate or non-muricate fruit. The type collection of *E. rugosa* was originally referred by DeCandolle to *E. polystachya* Rich.

Fruit is unknown in the other species which are here reduced to synonymy, and *E. riparia* itself is known only from flowering specimens. *E. lugens*, known only from the type, is a narrow-leaved flowering specimen in which the pubescence is dark brown and the lower surface of the leaves is rather thickly pubescent with pale hairs and rather numerous darker hairs; *E. amazonica* was distinguished by Berg from all other species by the rather longer petioles (up to 14 mm.); *E. fenzliana*, known only from the type, was distinguished by Berg chiefly because of the muticous outer calyx-lobes; *E. racemifera* was said by Berg to differ from *E. riparia* in leaf-shape, in the more dense indument and in the glabrous ovary; *E. schlechtendaliana*, according to Berg, was distinguished by the terminal thyrse and the leaves bearing glandular dots on the lower surface; *E. calothyrsa* was compared by Diels with *E. riparia*, but was said to differ in having a longer inflorescence, shorter and stouter pedicels, larger flowers and obtuse reniform bracts. The characters noted by Berg appear to be of little taxonomic value in this group of species; especially it may be noted that the "ovary" (that is, the depressed area surrounding the base of the style), uniformly bears some hairs but is glabrous in age, and does not vary as indicated by Berg. The glandular dots by which *E. schlechtendaliana* was distinguished may be seen on the lower surface of almost any immature leaf but usually become less apparent or indistinguishable in mature leaves; it may be noted in passing that in the type collection of *E. schlechtendaliana* the dots are most conspicuous in the youngest leaves. F.M. Negs. 19968, 19991, 19998, 20017, 23511, 23517, 23583, 31569.

San Martín: Pongo de Cainarachi, *Klug 2627*. Juanjuí, *Klug 3857*. Chazuta, *Klug 4131*. In sylvis ad Huallaga, *Poeppig 2395*, type of *racemifera*. Near Tarapoto, *Williams 6792*. San Roque, *Williams 7046*.—Loreto: Santa Rosa, below Yurimaguas, *Killip & Smith 28955*. Portal, lower Río Huallaga, *Killip & Smith 29259*. Mishuyacu, *Klug 373*. Balsapuerto, *Klug 2994*. Stromgebiet des Ucayali von 10° S. bis zur Mündung, *Tessmann 3118, 3122, 3301*. Iquitos to Pongo de Manseriche, *Tessmann 4915*. Pinto-Cocha, *Williams 805*. La Victoria, *Williams 2954*. Santa Rosa, *Williams 4883* (*muricata*).—Huánuco: Muña, *4025* (*muricata*). Cerro San Cristobal prope Cuchero, *Poeppig 1355*, type of *lugens* (herb. Wien).—Río Acre: Mouth of Rio Macauhan, *Krukoff 5273, 5408, 5592*. Seringal São Francisco, *Ule 9655*.—Madre de Dios: Iberia, Miraflores, Río Tahuamanu, *Seibert 2133*.—Without locality, "Ruiz & Pavón" 23/41, 23/42, probably type collection of *E. rugosa* (F).

Amazonian Brazil and Colombia; Guianas. "Rupiña" (Williams); "Carapacho" (Poeppig).

Eugenia scalariformis McVaugh, Fieldiana Bot. 29: 218. 1956.

A shrub or tree, the young leaves and twigs not seen, the mature leaves with a few fusiform appressed dibrachiate hairs up to 0.3 mm. long, on the lower surface; inflorescence densely felted with straight or crisped flaccid, pale brown, mostly dibrachiate hairs up to 0.3 mm. long; leaves elliptic or oblanceolate, 7.5–8 cm. wide, 33–35 cm. long, about 4 times as long as wide, acuminate at tip, narrowed somewhat toward the base where abruptly contracted and rounded-subauriculate, the basal margins somewhat prolonged and produced above the surface where decurrent on the inner angles of the stout petiole 4 mm. thick, 12–15 mm. long; midvein convex above, 2 mm. wide near the base, prominent beneath; lateral veins 25–30 pairs, including some nearly equal intermediate ones, impressed above, prominent beneath; marginal vein about equaling the laterals, nearly straight between them, 2.5–3.5 mm. from the margin, with a very slender submarginal vein beyond it; blades nearly concolorous, yellow-green, smooth and lustrous and minutely and obscurely impressed-puncticulate above; dull, sparingly pubescent and finely dark-dotted beneath; inflorescence probably an axillary cluster of a few pedicellate flowers on old wood; pedicels 15 mm. long, compressed, 2 mm. wide; bracteoles probably deciduous after anthesis, elliptic, about 5 mm. wide, 12 mm. long, appressed to the narrowly elliptic 8-angled hypanthium 4 mm. thick, 10 mm. long; buds probably about 2 cm. long; calyx-lobes imbricate, with thin lateral margins, concave, suborbicular, the two sides similarly pubescent; outer lobes often deciduous from the base after anthesis, about 16 mm. wide, 8–10 mm. long; inner lobes 20 mm. wide, 15 mm. long; disk 10 mm. wide, glabrous, the concave center 4 mm. wide; style glabrous, 2.5 cm. long; staminal ring very broad, the stamens probably about 500, up to 2 cm. long, the linear anthers 1.5–1.8 mm. long; petals glabrous, 12–15 mm. wide, 25–32 mm. long; ovary bilocular, thick-walled, the ovules about 40 in each locule, attached to the central axis in a U-shaped group.—F.M. Neg. 23507.

Loreto: Stromgebiet des Marañón, Santiago Mündung am Pongo de Manseriche, *G. Tessmann 4328* (G, type).

Eugenia schomburgkii Benth. in Hook. Jour. Bot. 2: 321. 1840. *E. correae* Berg, in Mart. Fl. Bras. 14, pt. 1: 277. 1857.

Large shrub, or tree up to 20 meters high, completely glabrous except the ciliate bracts and bracteoles, petals and calyx-lobes, and the finely rufous-hirsutulous staminal disk, or sometimes the branchlets and pedicels minutely prickly-hispidulous; leaves elliptic-lanceolate or elliptic-ovate, (2–) 3–5 (–6) cm. wide, (6–) 8–15 (–18) cm. long, 2.5–3.5 times as long as wide, gradually or abruptly acuminate at tip, rounded or subcuneate at base, the margins decurrent on the stout petiole which is 1 mm. or more thick, (4–) 6–8 mm. long, often transversely rimose in age; midvein sulcate or impressed above, prominent beneath; lateral veins 12–15 pairs, inconspicuous, somewhat raised beneath, the marginal vein moderately to strongly arched between the laterals and about equaling them, 2–4 mm. from the margin and with a second, weaker but evident submarginal vein; leaves drying green, the veins often reddish, the upper surface darker, smooth and lustrous, the glands scarcely apparent; lower surface dull, paler, often somewhat prominently gland-dotted; inflorescence an axillary raceme or sometimes 2 superposed racemes, the axis very short (1.5–2.5 mm.) and the 2–4 decussate pairs of flowers appearing glomerate; bracts rounded, persistent, about 1.5 mm. long and broad; pedicels relatively short and stout, compressed, (2–) 4–9 mm. long, 0.5 mm. thick (up to 1 mm. thick in fruit); bracteoles ovate, acute, persistent, 0.7–1 mm. long; hypanthium ellipsoid or obovoid, 1–1.5 mm. long, the calyx-lobes unequal, the larger broadly rounded or bluntly triangular, glabrous inside, 1.8–2.5 mm. long; disk about 2.5 mm. wide, the center flat, glabrous; style 7–10 mm. long; stamens 60–?75, about as long as the style; anthers 0.7 mm. long; petals orbicular or obovate, 5–7 mm. long; fruit globose or broadly ellipsoid, black at maturity, 1 cm. in diameter or up to 12–15 mm. thick and 15–19 mm. long, the calyx-lobes subpersistent; seed 1.—The type of *Eugenia correae* seems certainly conspecific with that of *E. schomburgkii*, which is a relatively homogeneous species of the Amazonian and Venezuelan lowlands. The type of *E. correae*, however, has the pedicels distinctly although minutely spinulose-hispidulous, whereas most specimens from Venezuela and the Guianas are very sparingly pubescent to almost completely glabrous. F.M. Negs. 19929, 23588.

Loreto: Timbuchi, *Williams 988*. Manfinfa, *Williams 1112*. Gamitanacocha, Río Mazán, *Schunke 113*.—Río Acre: Near mouth of Rio Macauhan, *Krukoff 5415*. "Lancha Caspi" (Williams). Bolivia and Amazonian Brazil to the Guianas.

The type of *Eugenia maculata* Berg, in Mart. Fl. Bras. 14, pt. 1: 297. 1857, is Poeppig's no. 2409, from Yurimaguas, Peru. This is a

plant bearing immature fruit; except that the racemes are up to 5 mm. long, with up to 8 pairs of flowers, I cannot distinguish this specimen from some of the broad-leaved plants referred above to *E. schomburgkii*, e.g. Schunke's no. 113. *E. maculata* also resembles *E. egensis*, from which it may be distinguished by the impressed midvein and the relatively few glands on the lower leaf-surface. Krukoff's no. 6346, from the basin of the Rio Madeira, near Tres Casas, Amazonas, Brazil, is also *E. maculata*, or near it. F.M. Neg. 23559.

Eugenia schunkei McVaugh, Fieldiana Bot. 29: 218. 1956.

A tree 5 meters high, glabrous except the red-strigose vegetative buds, the minutely ciliate bracteoles and calyx-lobes, and the sparingly hairy disk; leaves (those on short lateral branches not seen) on vigorous leading branchlets oblong-lanceolate, 5–6.5 cm. wide, 14–23 cm. long, (2.5–) 3.5 times as long as wide, slenderly acuminate, narrowly rounded at base, short-decurrent on the inner angles of the dark petiole 2 mm. thick, 10–12 mm. long; midvein plane and somewhat impressed above, usually with a narrow elevated median ridge, prominent beneath; lateral veins about 10 pairs, elevated both sides, diminishing distally and passing irregularly into the next succeeding ones, only in the apical third of the blade forming a marginal vein 3–6 mm. from the margin; blades olive green or dark, and very smooth but scarcely lustrous above, with no glands apparent at maturity; lower surface purplish red, smooth, dark-dotted, the small veins scarcely apparent; inflorescence axillary on old wood, an abbreviated raceme, or often several together on short spurlike excrescences, the axis up to 2 mm. thick and 5 mm. long, with up to 5–6 approximate decussate pairs of flowers on pedicels 1 mm. thick and 5–7 mm. long, the whole drying black; bracts not seen, probably small; bracteoles ovate, not connate, 1–2.5 mm. long, persistent; buds pyriform, 12–15 mm. long; hypanthium obconic, 5 mm. long; calyx-lobes oblong, hooded and thickened near tips, 5 mm. wide, 8–10 mm. long, rounded at the free apex about 2 mm. long, imbricate to near base and connate submarginally, ultimately spreading, the inner ones minutely ciliate on the scarious apical margins and at the free tips; disk 4 mm. wide, the glabrous center raised in an annular thickening about the style-base; style 12 mm. long; stamens about as long as the style, 300 or more, the anthers linear, 1.5 mm. long, erect in the bud, the filaments replicate; petals ovate, 10 mm. wide, 15 mm. long; ovary bilocular, the ovules about 12 in each

locule, radially attached to a short placenta on the central axis; fruit not seen.—Univ. of Mich. Neg. 450.

Loreto: Río Mazán, Quebrada Luño, alt. 110 meters, on river bank, Feb., 1935, *José M. Schunke 184* (US, type).

Eugenia spruceana Berg, in Mart. Fl. Bras. 14, pt. 1: 257. 1857.

A shrub or small tree to 6 meters high, the vegetative buds, petioles and branchlets (sparingly or densely) and the inflorescence (sparingly or not at all) strigose with straight white hairs 0.5–0.8 mm. long; leaves oblong, 4–7 cm. wide, 12–18 cm. long, 2.4–3 times as long as wide, nearly equally narrowed to both ends, gradually acuminate at the apex, rounded to the base, the margins abruptly decurrent on the petiole 1.2–2 mm. thick, 6–10 mm. long; petiole stout, dark, irregularly and spirally longitudinally furrowed, and transversely wrinkled, heavily strigose; midvein impressed above, prominent beneath; lateral veins 10–15 pairs, obscure but slightly elevated on both sides; marginal vein about as prominent as the laterals, somewhat arched between them, 2–3 mm. from the margin; blades smooth, dark and polished above, the lower surface dull and yellowish- or grayish-brown, somewhat strigose, waxy-papillose; glands not apparent on either surface; inflorescence an abbreviated axillary raceme, the axis up to 2 mm. long, bearing usually 2 approximate decussate pairs of flowers on pedicels 0.5–0.8 mm. thick, 5–10 mm. long; bracts ovate or lanceolate, 1 mm. long; bracteoles similar, 1–1.5 mm. long, persistent, not connate; buds 7–10 mm. long, pyriform, the hypanthium 4 mm. long, campanulate, usually thinly strigose; calyx-lobes suborbicular, chartaceous, concave, finely ciliate, glabrous inside, very unequal; outer pair about 4 mm. long and wide, connate along the margins about a third their length with the inner pair, which are thin-margined laterally, 8 mm. wide, 5 mm. long; disk about 4 mm. wide, the glabrous center 2 mm. wide; style 12 mm. long; stamens about as long as the style, 200–250, at least the inner incurved in bud, the anthers up to 2 mm. long, linear; petals concave, minutely ciliate, suborbicular, about 10 mm. long; ovary bilocular, the ovules about 15 in each locule, radiating from a short centrally affixed placenta.—F.M. Neg. 20004.

Peru (probably). Amazonian Brazil.

Eugenia stipitata McVaugh, Fieldiana Bot. 29: 219. 1956.

A small or large tree, hispidulous with stiff erect sharp yellowish-gray hairs, these particularly dense on the hypanthium and fruit,

and uniformly and thickly distributed on the branchlets and inflorescence; leaves short-petioled, the margins scarcely decurrent, the petioles not channeled ventrally but flat, the midvein flat at the base of the blade, channeled distally; lateral veins 6–10 pairs, widely spaced, relatively obscure above and raised and conspicuous beneath, not forming a marginal vein but each curving and forming a high arch between it and the next, the arches often as high as the distance between the veins; inflorescence racemose, axillary, usually an axis 1–1.5 mm. in diameter, 4–10 mm. long, with 3–5 decussate pairs of long-pedicelled flowers, the terminal flower wanting; axis sometimes elongate and leafy, floriferous at 1–2 lower nodes only, or each pedicel cymosely 3-flowered and the lateral secondary pedicels up to 8–10 mm. long; bracts 1–3 mm. long, linear; primary pedicels 10–20 mm. long, longitudinally several-striate and sharp-angled, the bracteoles linear, 1–2 mm. long, standing well below the terminal flower (whether on 1-flowered or 3-flowered pedicels); hypanthium obconic; disk somewhat quadrangular, hairy; calyx-lobes rounded, broader than long, strongly overlapping in bud, reflexed in anthesis, appressed-pubescent within; petals white, obovate, ciliate; ovary (3–) 4-locular, the ovules anatropous, 5–8 in each locule, slender-stalked, projecting horizontally from a short placenta above the middle of the central axis, aligned in two vertical rows with the micropyle turned outward.—This species occurs in two well-marked races, either one of which would probably be described as an independent species if it were found geographically isolated. These races, described below as subspecies, are readily distinguished by the characters given in the key, but they have so many qualitative characters in common that they seem surely conspecific. The generic position of *Eugenia stipitata* is by no means clear. The usually 4-locular ovary, the alignment of the ovules, the rather numerous seeds, and the method of branching of the inflorescence—all these suggest the subtribe Pimentinae. The structure of the seed, however, as far as I have been able to observe, is eugenioid.

1. **Eugenia stipitata** McVaugh, subsp. **stipitata.**

A tree up to 12–15 meters high, markedly hispidulous, the hairs of the lower leaf-surface uniformly and thickly distributed on veins and parenchyma, up to 0.5 mm. long; leaves ovate or broadly elliptic, (3.5–) 5–6 (–9.5) cm. wide, 8–13 (–18) cm. long, 1.8–2.3 times as long as wide, acuminate, rounded and often subcordate at base; petiole about 3 mm. long; lateral veins impressed above, diminishing distally, recurving at a point 2–5 mm. from the margin, and join-

ing the next vein at a point up to 10 (–25) mm. from the margin; glands obscure on both surfaces; bracteoles often at middle of pedicel or below; disk 4 mm. wide; style glabrous, 7–8.5 mm. long; calyx-lobes 4–6 mm. wide, 4–5 mm. long; petals 4 mm. wide, 10 mm. long; fruit unknown.—Univ. of Mich. Neg. 464.

Loreto: San Antonio, on Río Itaya, *Killip & Smith 29469; Williams 3397*. Mishuyacu, *Klug 788* (F, type). La Victoria, *Williams 2787*. "Pichi" (Williams). Amazonian Brazil.

2. **Eugenia stipitata** subsp. **sororia** McVaugh, Fieldiana Bot. 29: 219. 1956.

A shrub or small tree up to 3 meters high, finely hispidulous on the branchlets and inflorescence with hairs up to 0.3 mm. long, the leaves often glabrous beneath at maturity, hispidulous on the veins, or minutely and uniformly beset with hairs hardly more than 0.1 mm. long; leaves elliptic, 2.5–4.5 cm. wide, (6.5–) 9–13 cm. long, 2.2–3.3 times as long as wide, acuminate and sometimes acute and falcate at the tip, cuneately narrowed below the middle or sometimes broadly rounded, then often abruptly and unequally rounded into the petiole at the very base; petiole 3–4 mm. long; lateral veins not impressed above, scarcely evident, little diminished distally but recurving rather uniformly from a point 2–4 mm. from the margin to join the next vein up to 10 mm. from the margin; leaves sparingly or not at all dark-dotted above, sparingly dotted beneath; bracteoles mostly 3–5 mm. below the flower; disk 3 mm. across; style 5–6.5 mm. long, hairy near the base; calyx-lobes 3 mm. wide, 2.5–3.5 mm. long; petals 4 mm. wide, 7 mm. long; stamens about 75, 6 mm. long, the anthers 0.6 mm. long; fruit oblate, about 1.5 cm. across, velutinous, the seeds about 6–15, kidney-shaped, 3–7 mm. long, the cotyledons and embryo completely united except that the cotyledons are distinct for a short distance at the chalazal end.—Univ. of Mich. Neg. 474.

San Martín: Juanjuí, alto Río Huallaga, alt. 400 meters, forest, *Klug 3834* (type, GH). Tarapoto, *Williams 5486, 5667*. Amazonian Bolivia to Colombia (Villavicencio). "Rupiña caspi" (Williams).

Eugenia subterminalis DC. Prodr. 3: 263. 1828.

Shrub or tree up to 10 meters high, finely pubescent on the branchlets, inflorescence axis, petiole, midvein on upper surface of leaf, and leaf-margins, with minute pale or reddish sharp-pointed,

mostly erect hairs about 0.1 mm. long, these intermixed on the vegetative buds and leaf-bases with longer, somewhat appressed hairs up to 0.4 mm. long; leaves lance-ovate or occasionally elliptic, 1–2 (–2.7) cm. wide, 3–5 (–7) cm. long, 2.25–3.3 (–4) times as long as wide, gradually acuminate at tip, rounded to subcuneate at base, the margins decurrent on the stout channeled petiole up to 0.7 mm. thick, 1.5–2.5 mm. long; midvein more prominently raised above than beneath, elevated above in a nearly flat-topped pubescent ridge, somewhat raised beneath; lateral veins 8–12 pairs, obscure, with numerous parallel intermediates, all somewhat elevated on both sides when dry; marginal vein about equaling the laterals and arched between them, up to 1 mm. from margin (to 3.5 mm. in the largest leaves); leaves smooth, green or dark above when dry, the lower surface pale brown or coppery, the glands few and scarcely evident on either side even in young leaves; flowers solitary, opposite, from the 3–5 nodes at the base of new leafy shoots, or the shoots abortive and the raceme axis 2–3 mm. long with 3–5 decussate pairs of flowers; base of leafy shoot, or raceme axis, with scarcely imbricate, 4-ranked, dark-scarious deciduous ciliate bracts, the basal shortest, those subtending the flowers lanceolate to ovate, acute, 1–3.5 mm. long; pedicels filiform (up to 0.8 mm. thick in fruit, much more slender in flower), (6–) 15–30 mm. long, glabrous or slightly pubescent; bracteoles acute, ciliate, lanceolate, persistent, 1 mm. long or less; buds (immature) surrounded by the calyx-lobes, glabrous, about 4 mm. long; calyx-lobes reflexed at anthesis, glabrous both sides, ciliate, triangular-oblong or rounded at apex, 2–2.5 mm. wide, 3–3.5 mm. long; disk somewhat quadrangular, 2.5 mm. wide; flowers said to be white, not seen; stamens about 100; fruit probably globose or pyriform, seen immature (then 5–8 mm. long), with prominent calyx-lobes.—Killip & Smith's no. 29324 was compared directly with the type of *Eugenia subterminalis*, in Munich, in 1954, and seemed unquestionably to belong to the same species. There is some doubt as to the propriety of identifying a Peruvian species with DeCandolle's plant, because of the uncertainty about the source of the latter. The type of *E. subterminalis*, as noted on the specimen at Munich, was found by DeCandolle in the herbarium of Martius, mixed with the material of "*Myrtus modesta* Mart." (*Eugenia modesta* DC.). The type locality of both species is given by DeCandolle as "in Brazilia ad flum. Ilheos" (that is, near the Atlantic coast, in the State of Bahia), but no locality is noted on the type specimen of *E. subterminalis*, and it is of course possible that it came originally from somewhere on the upper Amazon. F.M. Neg. 20009.

San Martín: Quebrada Chambira cerca a Juanjuí, *Ferreyra 4567*. —Loreto: San Antonio, on Río Itaya, *Killip & Smith 29324; Williams 3499*. Yurimaguas, *Williams 5311*. ?Amazonian Brazil.

Eugenia tapacumensis Berg, Linnaea 27: 222. 1856.

A small tree, up to 10 meters high, nearly glabrous, the pedicels and hypanthium often minutely pubescent with pale erect hairs; leaves elliptic, (2–) 3.5–6 cm. wide, (4.5–) 9–14 cm. long, 2–2.5 times as long as wide, blunt-pointed or broadly and obscurely acuminate, rounded toward the base, the margins cuneate at the very base and decurrent on the petiole 1–1.5 mm. thick, (3–) 5–10 mm. long; midvein impressed or broadly sulcate above, prominent beneath, the lateral veins about 15 pairs, with about as many small intermediate veins, slender, slightly elevated on both sides when dry, the marginal vein about equaling the laterals, slightly and somewhat irregularly arched between them, 1.5–3 mm. from the margin, and with a smaller exterior submarginal vein; leaves drying green or brown, nearly concolorous, the upper surface lustrous and nearly eglandular, the lower dull and usually minutely gland-dotted; flowers often on old wood; inflorescence a very short axillary raceme, the axis 2.5 mm. long or less, with up to 5 decussate pairs of flowers, on pedicels up to 0.7 mm. thick, 5–6 mm. long, the number of flowers actually produced usually 2–4; bracts broadly rounded, deciduous, 1.5 mm. wide and 1 mm. long; bracteoles 1.3–1.5 mm. long, persistent, somewhat fused at the basal margins, ovate, acute or rounded at the tip; disk 2.5 mm. across; mature buds 4.5–5.5 mm. long, the rounded dome of the petals 2.5–4 mm. in diameter, much exceeding the broadly rounded calyx-lobes which are 1.7–2 mm. wide, 1–1.3 mm. high; style 6.5–8 mm. long; stamens 150–175, shorter than the style; anthers 0.8 mm. long; petals obovate to suborbicular, gland-dotted, 4.5–6 mm. long; fruit subglobose, about 1 cm. in diameter.—This species belongs to a group which ranges from the West Indies through most of tropical South America east of the Andes. It was first reported from Peru by Amshoff (Rec. trav. bot. néerl. 39: 164. 1942), on the basis of Klug's collection cited below. This collection agrees well with material of the same species from Venezuela and the Guianas, but Williams' no. 6527, also cited below, is more glandular than the average for the species. The group as a whole should be revised as soon as there is sufficient material of the several described glabrous species having small and few flowers in axillary clusters, and blunt elliptic leaves with the midvein somewhat impressed. F.M. Neg. 31621.

San Martín: Tarapoto, *Williams 6527*.—Loreto: Juanjuí, *Klug 4271*. Amazonian Brazil, to Colombia, Venezuela, the Guianas, and the Lesser Antilles.

Eugenia tenuimarginata McVaugh, Fieldiana Bot. 29: 220. 1956.

Tree or shrub, the new growth not seen, the mature foliage and branchlets glabrous, the inflorescence minutely appressed-pubescent with glistening brown hairs 0.1–0.2 mm. long; leaves elliptic to elliptic-ovate or -obovate, 5.5–8 cm. wide, 10–14 cm. long, about twice as long as wide, the tips decurved and bluntly acuminate, the base convexly acute, the margins decurrent on the channeled petiole 1.5 mm. thick, 15 mm. long; midvein impressed above, prominent beneath; lateral veins 6–8 pairs in addition to some intermediates, slightly raised above, prominent beneath; marginal vein (above the middle of the blade) about equaling the laterals and arched between them, 6–10 mm. from the margin, the lowest lateral veins diminishing distally and not forming a marginal line but recurving to join the next succeeding ones; blades on the upper surface pale green, papillose-roughened, with no glandular dots apparent; lower surface purplish green, dull, siliceous-papillose; inflorescence an abbreviated axillary raceme, the axis almost none, bearing 1–2 approximate decussate pairs of flowers on compressed pedicels 1 mm. thick, 5–8 mm. long; bracts small, chartaceous, deciduous; bracteoles ovate, blunt-tipped, the basal margins united 0.5 mm. forming a laterally notched boat-shaped involucre 4 mm. long; buds 8–9 mm. long, pyriform, the hypanthium rather densely strigose, 3 mm. long, distally campanulate, attenuate at base; calyx-lobes with thin, hyaline fragile margins, broadly rounded, glabrous within, unequal, the outer notably shorter, 4–6 mm. wide, 4–4.5 mm. long, the inner 5–8 mm. long and wide; disk about 6 mm. wide; style 9–10 mm. long; stamens about 250, up to 8 mm. long, the anthers 1–1.2 mm. long; petals concave, suborbicular, ciliate, 8–10 mm. long; ovary bilocular, the ovules about 20 in each locule, radiating from a short placenta affixed to the central axis.—Univ. of Mich. Neg. 437.

Loreto: Mouth of the Río Santiago, on high land, *G. Tessmann 4213*, in "1924" (G, type).

Eugenia tetrasticha Poepp. ex Berg, in Mart. Fl. Bras. 14, pt. 1: 324. 1857.

A shrub or small tree, short-hispidulous on the branchlets, inflorescence and lower leaf-surface with uniformly distributed erect

sharp brownish-yellow hairs up to 0.5 mm. long; leaves broadly elliptic to obovate, markedly bullate, 5–10 cm. wide, 10–20 cm. long, 1.7–2.2 times as long as wide, short-acuminate, rounded or gradually narrowed to the base, the margins very shortly decurrent on the very stout petiole 3–6 mm. long, 2–2.5 mm. thick; midvein flat above, but like the other principal veins much depressed beneath the general surface of the blade and prominent beneath; lateral veins about 15 pairs; marginal vein about equaling the laterals and arched between them, 3–5 mm. from the margin; upper surface of blade dark green in drying, glabrous or nearly so, lustrous; lower surface dull, greenish-brown, marked with the somewhat contrasting dark coppery-brown veins; glands scarcely apparent on either surface; inflorescence a contracted axillary raceme (or 2–3 racemes superposed), the axis quadrangular, (3–) 10–18 mm. long, 1–2 mm. thick at the base, with up to 8–13 approximate, decussate pairs of flowers subtended by persistent, strigose, round or ovate bracts 1–1.3 mm. long; pedicels divaricate, 0.5 mm. thick, 5–14 mm. long; bracteoles ovate, 1.5 mm. long, acute, ciliate but otherwise nearly glabrous, the basal margins connate; disk about 2 mm. wide, glabrous; calyx-lobes broadly rounded, about 1.5 mm. wide, 1–1.5 mm. long, ciliate but otherwise glabrous; fruit ellipsoid, 5–6 mm. wide, 6.5–8 mm. long.—A most distinctive species, known only from the type locality and vicinity, and collected in mature or nearly mature fruit only. F.M. Neg. 31622.

Loreto: Yurimaguas, *Killip & Smith 27938; Poeppig 2139* [=*Addenda 53*], type; *Williams 3848, 4240, 4709*. "Rupiña" (Williams).

Eugenia tumulescens McVaugh, Fieldiana Bot. 29: 221. 1956.

A mound-forming shrub 70 cm. high, the bark of leafy twigs flaking off in thin dark red plates, the inflorescence thinly tomentose with crisp brownish-white hairs up to 0.5 mm. long; leaves elliptic or oblong, (4.5–) 6–8 cm. wide, (10–) 20–38 cm. long, (2.5–) 3–5 times as long as wide, abruptly or gradually acuminate at tip, gradually or somewhat abruptly rounded at base, the margins passing abruptly into the much-thickened and corky-roughened exfoliating reddish petiole 3–4 mm. thick, 10–18 mm. long; midvein prominently convex on both surfaces (hardly less prominent above than beneath); lateral veins 20–30 pairs, convex above but the leaf-surface sulcate, prominent beneath; marginal vein about equaling the laterals, 3–5 mm. from the margin, slightly arched between the laterals but forming a definite vein, separated from the margin by a second

and indistinct vein; blades olive-green in drying, smooth and lustrous above, dull beneath, with prominent biconvex glands 0.3 mm. wide, 1–3 mm. apart, on both surfaces; inflorescence an axillary cluster of 6–8 flowers, probably opposite in decussate pairs but the axis very short; pedicels somewhat compressed, 1 mm. wide, 8–10 mm. long; bracts inconspicuous; bracteoles persistent through anthesis, spreading, 3 mm. wide at base, 4–5 mm. long; hypanthium sessile, cup-shaped, rounded at base, 3 mm. wide and long, obtusely 8-ridged, abruptly expanded into the gamosepalous base of the calyx, which is 1 mm. long, 4.5–5 mm. wide; calyx-lobes oblong, erect in anthesis, 4–5.5 mm. wide, 6–8 mm. long, round-tipped, glabrous inside; disk 3.5–4 mm. wide; style 10–12 mm. long, glabrous; stamens 250–300, the filaments 8–10 mm. long, the anthers lanceolate, slenderly apiculate, 2.4–2.6 mm. long; petals white, obovate, cucullate, glabrous, ciliate, 7 mm. wide, 13 mm. long; ovary bilocular, the ovules about 10 per locule, radiating from a short placenta attached to the central axis; immature fruit long-ovoid; fruit "amarelo salmon" (Fróes).

Peru (possibly). Amazonian Brazil (lower Rio Negro).

Eugenia ulei (Diels) McVaugh, comb. nov. *Psidium ulei* Diels, Verh. Bot. Ver. Brandenb. 48: 187. 1907.

A shrub or tree with compressed branchlets, in age nearly glabrous, but the inflorescence in anthesis, and the young shoots and leaves, sparingly to densely strigose to tomentellous with appressed pale or reddish white, at least in part sessile, fusiform and dibrachiate hairs up to 0.5 mm. long; leaves elliptic to ovate or obovate, 4.5–5 cm. wide, 8–11 cm. long, about twice as long as wide, usually about equally narrowed to both ends, the tip acute to deltoid-acuminate, the base acute, the margins cuneate-decurrent on the thin-edged pubescent petiole 1 mm. thick, 5–7 mm. long; midvein impressed above, prominent beneath; lateral veins about 10–12 pairs, visible as fine lines on both sides, more conspicuous beneath; marginal vein about equaling the laterals and arched between them, 1.5–2.5 mm. from the margin; leaves nearly concolorous, somewhat darker and more lustrous above, with small glandular dots apparent on both surfaces; inflorescence an axillary or falsely terminal raceme up to 4.5 cm. long, with at least two decussate pairs of flowers on pedicels 1 cm. long; axis of the raceme about 1.3–2 mm. thick below the lowest node; bracts deciduous or sometimes persistent, paired, forming a boat-shaped involucre 9 mm. long; bracteoles ("prophylla") according to Diels 3–4 mm. long, 6 mm. wide, glabrous within, probably

deciduous after anthesis; calyx-lobes 4, triangular-ovate, 8–9 mm. long, 5–6 mm. wide at base, tomentulose without, appressed-pubescent within; disk probably 5–6 mm. wide, glabrous ("glabrescens," according to Diels); style 7–?8.5 mm. long; stamens numerous, about as long as the style; petals white (Ule), obovate, sparsely hairy, 4–5 mm. wide, 8–10 mm. long; ovary, according to Diels, bilocular.—F.M. Neg. 23500.

San Martín: Tarapoto, prope Fuan-Guerra [Juan Guerra], Dec., 1902, *Ule 6645* (type, in herb. Berol., not seen, probably destroyed; G; fragm., F).

The photograph of the isotype at Geneva (F.M. Neg. 23500) shows clearly the racemose nature of the inflorescence in this specimen. On the basis of this feature alone one might justify the transfer of Diels' *Psidium ulei* to *Eugenia*. The photograph also shows the presence of a tiny capitate stigma and paired boat-shaped bracts, both of which are commonly found in *Eugenia* but not in *Psidium*. The broad rounded bracteoles are to be expected in this group of *Eugenia*, but not in *Psidium*. The presence of 4 calyx-lobes and a bilocular ovary are to be expected in *Eugenia*, but not in *Psidium*. Finally, the whole aspect of the type, as indicated by the photograph, is strikingly like that of other racemosely flowered species of *Eugenia*, e.g. *E. riparia*.

Eugenia versicolor McVaugh, Fieldiana Bot. 29: 223. 1956.

A tree to 15 meters high, the branchlets and inflorescence densely puberulent with short crisped pale reddish hairs; leaves elliptic, (2.5–) 3.5–4.5 cm. wide, 6–13 cm. long, about 2–3 times as long as wide, acuminate at tip, acute to rounded at base, the margins passing into the flat ventral surface of the slender flexuous petiole which is up to 1 mm. thick and 8 mm. long; midvein sulcate or nearly flat above, prominent beneath; lateral veins 6–10 pairs, slightly convex on both surfaces and a little more prominent beneath, scarcely forming a marginal vein but diminishing distally and forming a series of loops 3–6 mm. from the margin; leaves smooth and lustrous and probably dark green above, rusty- or ashy-brown beneath, the lower surface obscured by very numerous tiny glistening hairs; glands scarcely apparent in mature leaves; inflorescence borne with new leaves on slender branchlets 2–3 mm. thick; racemes much abbreviated, the axis almost undeveloped, bearing 1–3 pairs of approximate decussate flowers (the 4–12 flowers at each node forming an umbelliform cluster) on slender pedicels 0.5 mm. thick, 3–6 mm. long; bracts broadly

ovate, less than 1 mm. long; bracteoles rounded, 1–2 mm. wide, connate into a persistent involucre 2–2.7 mm. long; buds 4.5–6 mm. long, globose above the cup-shaped hypanthium 2–2.5 mm. long; calyx-lobes broadly rounded, in unequal pairs, appressed-hairy within, 2.5–3.5 mm. wide, 1.5–2 mm. long; disk hairy, 2–2.5 mm. wide; style 7–9 mm. long; stamens about 200, shorter than the style; anthers about 0.5 mm. long; petals rotund, about 6 mm. long and wide, ciliate but otherwise nearly glabrous, gland-dotted; ovary bilocular, the ovules 15–20 in each locule, radiating from a centrally affixed placenta.—Known from two recent collections not far from the Peruvian boundaries: Brazil, Amazonas, Mun. São Paulo de Olivença, *Krukoff 8910;* Colombia, Amazonas, trapecio amazónico, Loretoyacu River, *Schultes 6959*, type.

Peru (probably). Amazonian Brazil and Colombia.

EXCLUDED SPECIES

Eugenia conglobata [Sessé & Mociño]. A specimen at G, from the Moricand herbarium, received by Moricand from Pavón in 1827, is labeled "*Eugenia conglobata* sp. nova Peru," and in another hand, "Pavon." The plant is precisely the same as the specimens of *Eugenia conglobata* Sessé & Mociño (Pl. Nov. Hisp. 77. ed. 2, 1893), from Acahuizotla, Mexico (nos. 2055 and 2107, in the duplicates of Sessé & Mociño at F). The Mexican specimens have been identified by Standley as *Eugenia origanoides* Berg. Numerous other duplicates from the collections of Sessé and Mociño are present in the Geneva herbarium, and it seems apparent that the name of Pavón and locality "Peru" were mistakenly added to the present specimen at some time after its receipt by Moricand.

Eugenia guayaquilensis (HBK.) DC. Prodr. 3: 275. 1828. *Myrtus guayaquilensis* HBK. Nov. Gen. & Sp. 6: 147. (folio ed. p. 117). 1823. Berg (Linnaea 27: 190. 1856) cited a Peruvian example of this species, collected by Ruiz and deposited in the Berlin herbarium. As far as I am aware *E. guayaquilensis* is extremely local in distribution, having been collected only in the vicinity of Guayaquil, near the coast of Ecuador. If the specimen which Berg saw was correctly identified, it probably did not originate in Peru.

Eugenia ligustrina (Sw.) Willd. A widespread species, occurring from the Greater Antilles to eastern and southern Brazil. It is easily recognized by its small lustrous glabrous obovate leaves 3–5 cm. long, and by the 4-ranked imbricated scarious bracts which surround

the base of the young shoots. The flowers are solitary, on long slender pedicels, from leafless nodes but subtended by linear scarious bracts up to 1.5 mm. wide, 8 mm. long. This is a member of the group segregated by Berg as a genus, *Stenocalyx*. Other representatives of this genus occur in Amazonian Brazil and in the lowlands of northern Bolivia. A specimen of *E. ligustrina* from the herbarium of Moricand (G) is labeled "Myrtus bracteiflora," the collector is given as Pavón, and the locality is given as "Peru." The plant is an exact match for the type collection of *Myrtus bracteiflora* Sessé & Mociño, a native of Puerto Rico, and the specimen is doubtless one of the several in the Moricand herbarium which are known to have been mistakenly labeled "Peru" and "Pavón."

Eugenia ruiziana Berg, Linnaea 27: 167. 1856. *Luma ruiziana* (Berg) Burret, Notizbl. Bot. Gart. Berlin 15: 524. 1941. "(v. in hb. Berol.). . . . Habitat in *Peruviae Andium* nemoribus (Ruiz)." This is referred by Berg to his species group *Biflorae*, and is said to be closely related, except for the sometimes 3-flowered peduncles, to a Chilean species, *E. chrysocarpa* Berg [*Myrceugenia chrysocarpa* (Berg) Kausel]. Burret suggests that *E. ruiziana* (*Luma ruiziana*) may be a synonym of *Luma parvifolia* (DC.) Burret, which is also a Chilean species [*Myrceugenia parvifolia* (DC.) Kausel]. Kausel himself, in a recent commentary on some species of *Myrceugenia*, tentatively accepts this disposition of *Eugenia ruiziana* (Lilloa 13: 133. 1947). It seems likely in any event that *E. ruiziana* is to be excluded from the flora of Peru.

5. MYRCIANTHES Berg

Reference: Berg, Linnaea 27: 315. 1856, and in Mart. Fl. Bras. 14, pt. 1: 351–354. 1857.

Calyx-lobes 4 (or in some species 5), distinct, imbricated, persistent. Hypanthium not prolonged beyond the summit of the ovary. Petals as many as the calyx-lobes, conspicuous. Ovary usually biocular, the ovules several (5–20, usually 10–15) in each locule, in a sub-capitate group attached near the middle of the central dissepiment or in a few species (with 7–10 ovules) attached somewhat above the middle and the ovules pendent. Seeds one or two, often one developing in each locule, the cotyledons distinct, accumbent, large, fleshy, plano-convex; radicle often hairy, stout, usually about one-third as long as the cotyledons or less, impressed between their edges and lying at right angles to them or curved parallel to their margins; plumule often silky-hairy, much shorter than the radicle. Inflores-

cence an axillary dichasium, the central (terminal) flowers usually sessile in the forks; flowers usually 3 or 7, sometimes as many as 31, or reduced to 1 only (but if solitary, arising directly from the axils of foliage leaves, not from the lower bracteate nodes of new branches which are leafy above, nor from the bracteate nodes of abortive axillary buds). Bracts and bracteoles mostly linear or lanceolate, scarious, deciduous at anthesis or often much before this.

As originally proposed by Berg, this genus consisted of 4 species only, all natives of southeastern Brazil or of Uruguay. The genus was recognized by Berg and distinguished by him from *Eugenia* because of the 5-merous flowers of the 4 original species. Species with flowers in a dichasium, but with 4-merous flowers, were referred by Berg to *Eugenia*, but may also be regarded as members of an independent genus, *Anamomis* Griseb. (Fl. Brit. W. Ind. 240. 1860). I am unable to perceive any differences between *Myrcianthes* and *Anamomis* except the number of perianth-parts, and even this is inconstant. Almost any of the 4-merous species may have occasionally 5-merous flowers. One species in cis-Andean Peru has 5-merous flowers but has little apparent affinity otherwise with the Uruguayan and south-Brazilian species. The various details of inflorescence structure, calyx morphology, placentation and seed structure are so much alike in the supposed "*Anamomis*" and "*Myrcianthes*" that their close relationship is apparent. There appears to be no justification for maintaining them as separate genera, and the older name, *Myrcianthes*, is here taken to apply to both.

The taxonomy of the American eugenioid Myrtaceae has recently been studied by Eberhard Kausel. According to Kausel's treatment (Ark. Bot. ser. 2, 3: 502. 1956) the species assigned in this *Flora* to *Myrcianthes* would be divided among the genera *Anamomis*, *Myrcianthes* and *Amyrsia*. Kausel stated that in the genus *Anamomis* the embryo lacks a plumule, but my observations on mature seeds of the type species, *A. fragrans* (Sw.) Griseb., do not confirm this. In all species of *Myrcianthes* (including *Anamomis*) of which seeds have been available, it is noteworthy that the plumule is invariably present in the mature seed but often appears to be wanting in half-grown or other immature seeds, suggesting that this structure develops relatively late in the maturation of the embryo.

Certain Andean species previously referred to *Eugenia* (e.g. *E. orthostemon* Berg, *E. minimifolia* McVaugh, *E. cartilaginea* McVaugh, *E. myrsinoides* (HBK.) Diels, and *E. triquetra* Berg) are probably better referred to *Myrcianthes*, as indicated by general similarity to

the species of that group. None is known in the fruiting condition, however, and all are strictly 1-flowered species (i.e. the inflorescence is never a dichasium as far as known), so that positive generic assignments cannot be made. In this *Flora* the species in question are associated with the undoubted species of *Myrcianthes* in the key to that genus, and they are treated as species of *Myrcianthes* except that the formal nomenclatural combinations have not been made. A sixth species, *Eugenia myrtomimeta* Diels, is probably of another generic affinity, as discussed below, but is keyed out here with *Myrcianthes*. In the key which follows, these species of uncertain generic position are treated as species of *Eugenia* (e.g. *E. minimifolia*, *E. myrtomimeta*, etc.).

Leaves ternate, or opposite at some nodes, 2 cm. long or less; flowers solitary, axillary; Cajamarca, north to Colombia.... *E. triquetra*

Leaves opposite, or occasionally subopposite only.

Primary branches of the inflorescence racemosely arranged (i.e. in decussate pairs), but each cymosely 3- (or rarely 7-) flowered, or 1-flowered; hypanthium on a slender stipe (pseudostalk) often longer than itself, the bracteoles thus well below the flower and the central flowers apparently pedicellate.
(see *Eugenia stipitata*, p. 735)

Cymes (dichasia) arising directly from the leaf-axils, sometimes irregularly branched but the branches never in decussate pairs; bracteoles usually closely subtending the flowers, and each branch of the inflorescence terminated by a sessile or nearly sessile flower at the first node.

Flowers 5-merous; leaves coriaceous, yellow-green and vernicose, subsessile, orbicular to broadly ovate, 1.5–7.5 cm. long and wide; Pacific slope, Lima..... *M. quinqueloba*

Flowers 4-merous; leaves various; species mostly of the inter-Andean valleys..... Key A

A Flowers solitary (see also under second A, for plants with flowers partly solitary and partly in threes or more numerous).

Leaves 6 mm. long or less, rigidly coriaceous, vernicose, prominently impressed-punctate on both sides; flowers numerous toward the tips of the branches, on peduncles 2–3 mm. long. *E. minimifolia*

Leaves mostly 1–2.5 cm. long, the texture various; blades not impressed-punctate beneath, sometimes obscurely so above;

flowers relatively few, not crowded in the terminal axils, the pedicels (or peduncles) usually much longer.

Hypanthium with strong longitudinal angles; leaves often suborbicular, grayish-green and closely appressed-pubescent beneath..... *M. oreophila*

Hypanthium not angled; leaves rarely suborbicular, neither grayish-green nor closely appressed-pubescent.

Hypanthium narrowly obconic, attenuate at base; pedicels 12–20 mm. long; calyx-lobes glabrous within; leaves about 2.5 cm. long, mostly acutely narrowed to both ends..... *E. myrtomimeta*

Hypanthium narrowly campanulate or broader, blunt or rounded at base and usually broader than the markedly compressed pedicel; calyx-lobes appressed-pubescent within (sometimes sparingly so in *E. myrsinoides* with pedicels 2–6 mm. long); leaves various.

Leaf margins pale, cartilaginous-thickened and revolute, often irregularly roughened and apparently denticulate because of the prominent glands; flowers always solitary, the pedicels filiform, little compressed, scarcely 1 mm. wide at summit, 10–20 mm. long or more.
E. cartilaginea

Leaf margins scarcely thickened or roughened, the glands scarcely or not at all apparent in mature leaves; peduncle 1- or 3-flowered, usually markedly compressed, enlarged distally and 1 mm. wide or more.

Stamens 250 to more than 300; inflorescence glabrous, the branchlets glabrous or coarsely appressed-pubescent; peduncle 1- or 3-flowered, if 1-flowered 5–15 mm. long, compressed, up to 1.5 mm. wide; calyx-lobes 2.5–5 mm. wide; Huánuco and Cuzco.
M. indifferens

Stamens 50–100; branchlets from nearly glabrous to pubescent, if coarsely pubescent the inflorescence not markedly less so; peduncle 1- or 3-flowered.

Leaves mostly less than 1.5 cm. long, obovate, and cuneate at base; flowers all solitary, on pedicels mostly 2–6 mm. long; hypanthium mostly glabrous; northern Peru and Ecuador.
E. myrsinoides

Leaves 1.2–4 (–6) cm. long, broadly elliptic to ovate, rounded at base; peduncles usually 3-flowered.

Branchlets glabrous or sparingly strigose; Ecuador and Colombia.

Hypanthium densely pale-strigose; peduncle 1.5–2 mm. wide at summit; calyx-lobes 2.5–3 mm. wide; style 7–8.5 mm. long; Ecuador and southern Colombia..... *M. hallii*

Hypanthium glabrous or sparingly strigose; peduncle 1–1.2 mm. wide; calyx-lobes 1.5–2 mm. wide; style 5–6 mm. long; central Colombia and (?)southern Ecuador... *M. foliosa*

Branchlets densely strigose with straight appressed white or brownish hairs; southern Peru (Arequipa)..... *M. ferreyrae*

A (See also first A, for plants with solitary flowers at least in part). Flowers 3 to many, in dichasia, the central flowers usually present and sessile.

Veins of the lower leaf-surface raised in a conspicuous reticulum, the veinlets enlarged, with appearance of having softened and fused; plants silky-strigose; inflorescence long-pedunculate, 3- to 7-flowered, the terminal flowers not closely sessile, often pedicellate up to 3 mm..... *M. fimbriata*

Veins, if apparent, slender and inconspicuously reticulate; pubescence and inflorescence various; terminal flowers usually closely sessile.

Inflorescence stout, the peduncle 2–3.5 mm. wide near summit; flowers usually 3–7, large, the style 10–11 mm. long; northern Peru (Huánuco, Cajamarca) to Colombia.

Inflorescence usually reddish-purple, glabrous or essentially so. *M. rhopaloides*

Inflorescence softly and densely tomentose with gray or yellowish-white hairs..... *M. lanosa*

Inflorescence green or brownish in drying, glabrous or variously pubescent, more slender, the peduncle 2 mm. wide at summit or usually less; flowers smaller, the style 8.5 mm. long or less.

Inflorescence 7-flowered (or the smaller ones on the same plant 3-flowered), or repeatedly branched and many-flowered;

plants usually markedly strigose or otherwise pubescent, especially on the inflorescence and hypanthium.

Inflorescence loosely pubescent or tomentose with soft curved or spreading hairs; dichasia usually with more than 7 flowers.

Pubescence of whitish spreading hairs 0.5–1 mm. long; leaves mostly obovate, 5 cm. long or less; northern Peru (Huánuco, Cajamarca).....*M. lindleyana*

Pubescence of rufous curved matted hairs; leaves elliptic-ovate, 6.5–11 cm. long; Bolivia.....*M. pearcei*

Inflorescence thinly appressed-puberulent or strigose with shorter hairs; leaves and number of flowers variable.

Leaves less than 2 cm. long, obovate, cuneate; flowers small (style 3.5–4.5 mm. long), numerous in terminal clusters of 2- to 3-forked cymes; Bolivia.
M. osteomeloides

Leaves, if less than 2 cm. long, usually elliptic or suborbicular, rarely cuneate; style 5–7 mm. long; dichasia axillary, 3- to 7-flowered; central Peru to Ecuador.

Branchlets thinly appressed-puberulent; leaves elliptic-oblong, 2.5–5 cm. long; disk 3.5–4 mm. wide, the hairy staminal ring prominent; calyx-lobes 2.5–3 mm. long; stamens more than 200; northern Peru (Piura) and Ecuador.....*M. limbata*

Branchlets coarsely pubescent with spreading-ascending hairs; leaves elliptic to suborbicular, 0.5–2 cm. long; disk 2.5 mm. wide, the staminal ring inconspicuous, nearly glabrous; stamens 50–60; central Peru (Ayacucho, Apurímac).....*M. bifurcata*

Inflorescence 3-flowered (or if occasionally 7-flowered, glabrous), or the flowers solitary in some or all of the axils; hypanthium glabrous or variously strigose.

Hypanthium with strong longitudinal angles, the surface whitened with small soft hairs which are matted or felted together; leaves on flowering branches often suborbicular or nearly so, grayish-green beneath and appressed-pubescent with very short and partly dibrachiate hairs 0.1–0.2 mm. long; Cuzco.
M. oreophila

Hypanthium not angled, glabrous or somewhat coarsely strigose; leaves various, rarely suborbicular, neither gray-green nor closely appressed-pubescent.

Branchlets nearly or quite glabrous, sometimes thinly strigose; central and northern Peru to Colombia.

Leaves obovate, cuneate, 3 cm. wide, 5 cm. long; hypanthium glabrous, the peduncle minutely hispidulous; stamens about 175 . . . . . *M. compressa*

Leaves mostly elliptic to ovate or suborbicular, often less than 5 cm. long; pubescence various, not as above.

Stamens 250 to more than 300; inflorescence glabrous; peduncle often 1.5 mm. wide or more at summit; calyx-lobes 2.5–5 mm. wide; petioles 2–3 mm. long; Huánuco and Cuzco. *M. indifferens*

Stamens 50–100; pubescence various; inflorescence sometimes glabrous but if so the calyx-lobes usually less than 2.5 mm. wide or the petioles 3–5 mm. long; northern Peru to Colombia.

Leaves 3–5 cm. long; petioles 3–5 mm. long; inflorescence, including base of hypanthium, glabrous; northern Peru (Libertad, Cajamarca). *M. discolor*

Leaves mostly less than 3 cm. long; petioles mostly less than 3 mm. long; inflorescence, at least the hypanthium, usually strigose.

Hypanthium densely pale-strigose; peduncle 1.5–2 mm. wide at summit; calyx-lobes 2.5–3 mm. wide; style 7–8.5 mm. long; Ecuador and southern Colombia, often cultivated. *M. hallii*

Hypanthium glabrous or sparingly strigose; peduncle 1–1.2 mm. wide; calyx-lobes 1.5–2 mm. wide; style 5–6 mm. long; central Colombia and (?)southern Ecuador. *M. foliosa*

Branchlets with numerous appressed or spreading stiff hairs up to about 0.5 mm. long; central and southern Peru.

Inflorescence glabrous; stamens about 250–300; Huánuco and Cuzco..... *M. indifferens*
Inflorescence rather densely strigose; stamens about 50; coastal hills, Arequipa..... *M. ferreyrae*

Myrcianthes bifurcata (McVaugh) McVaugh, comb. nov. *Eugenia bifurcata* McVaugh, Fieldiana Bot. 29: 205. 1956.

A shrub to 3 meters high, the branchlets, vegetative buds, and petioles thickly and coarsely pubescent with spreading or ascending yellowish or sordid hairs up to 0.5 mm. long, the inflorescence more sparsely pubescent, with finer and paler appressed hairs, the hypanthium whitened or merely thinly strigose; branchlets eglandular; leaves elliptic or suborbicular to ovate or obovate, occasionally cuneate, 0.5–1.5 cm. wide, 0.5–2 cm. long, 1–1.5 (–2) times as long as wide, usually rounded or emarginate at tip but sometimes bluntly pointed, rounded or sometimes acute or cuneate at base; margins decurrent on the stout petiole 1–2 mm. long; midvein slightly impressed above and raised beneath; lateral veins 6–10 pairs, obscure on both sides of the mature leaves or slightly elevated beneath; marginal vein often obscure except in immature leaves, somewhat arched between the laterals, 0.5 mm. from the margin; blades darker green and somewhat lustrous above, impressed-punctate but often obscurely so; lower surface dull and paler, gland-dotted; flowers in terminal corymbose clusters, the individual inflorescences mostly 3- or 7-flowered dichasia 2–3 cm. long, the lower ones on short new leafy or abortive branchlets from the upper leaf-axils, and the upper ones arising directly as branches from the terminal shoot; peduncles compressed, up to 2 cm. long and more than 1 mm. wide at summit; lateral branches divaricate, 3–6 mm. long; bracts and bracteoles deciduous before or during anthesis, lanceolate, 2–3 mm. long; buds 3–4 mm. long, the hypanthium campanulate; calyx-lobes in unequal pairs, rounded or bluntly triangular, 1.5–2 mm. wide and long, ciliate and (at least one or both of the outer pair) finely appressed-pubescent within; disk quadrangular, 2.5 mm. wide, the staminal ring slightly pubescent; style glabrous, 5–7 mm. long; stamens white, 50–60, 5–6 mm. long, the anthers 0.4 mm. long; petals glabrous, greenish white (Stork & Horton), obovate, 4 mm. long; ovary bilocular, the ovules about 7 in each locule, radiating from a central placenta; fruit not seen.—This species is evidently nearly akin to *Myrcianthes osteomeloides* but differs in a number of individually trivial respects, the most notable of which are set forth above in the key to species. Univ. of Mich. Neg. 440.

Apurímac: Valley of the Río Pampas, elev. 2,600 meters, *Weberbauer 5842* (US, type). Pincos, elev. 2,700 meters, *Stork & Horton 10678*.—Ayacucho: Hills from River Pampas to Ocros, elev. 9,000–10,000 feet, *R. Pearce s.n.*

Eugenia cartilaginea McVaugh, Fieldiana Bot. 29: 205. 1956.

A shrub or small tree 4–6 meters high, finely hispidulous on the branchlets, petioles and leaves near base with erect or somewhat appressed pale hairs 0.2–0.4 mm. long, strigose on the vegetative buds with somewhat longer hairs; leaves small and lustrous, ovate or elliptic, 7–15 mm. wide, 10–25 mm. long, 1.5–2 times as long as wide, rounded to acute and usually mucronate at tip, mostly cuneate at base, the margins attenuate into the petiole 1–2 mm. long; margins whitish, cartilaginous-thickened and somewhat revolute, often irregularly roughened and appearing denticulate because of the prominently elevated glands; midvein slightly sulcate above, prominent beneath; lateral veins indefinite, about 6–10 pairs, somewhat raised and evident on both sides in young leaves, usually obscure in mature leaves; marginal vein about equaling the laterals and markedly arched between them, mostly less than 1 mm. from the margin; leaves nearly concolorous, drying green or pale brown, the upper surface often very smooth and lustrous, eglandular at maturity or sparingly impressed-punctate, the lower surface somewhat lustrous, gland-dotted at least when young; flowers solitary, axillary, subtended by normal leaves or those from the lowest 1–2 nodes on a branchlet subtended by ovate strigose deciduous bracts about 1.5 mm. long; pedicels filiform, somewhat compressed and up to 1 mm. wide just below the bracteoles, 10–20 (–32) mm. long, ascending or widely spreading; bracteoles linear-subulate, ciliate, 2–3 mm. long, deciduous at anthesis; hypanthium glabrous, obconic, 1.5–2 mm. long; calyx-lobes broadly rounded, gland-dotted, ciliate, closely appressed-pubescent on the inner surface, the larger 2.5–3 mm. wide, 2–2.5 mm. long; disk 2.5–3 mm. wide, glabrous at the center; style 5–6 mm. long, glabrous; petals white, obovate, ciliate, 4–5 mm. long; stamens about 75, 5–7 mm. long, the anthers 0.3–0.5 mm. long; ovary bilocular, the ovules 7–8 in each locule, radiating from a central placenta; fruit not seen.—This species is very similar to *E. orthostemon* Berg, which ranges from central Ecuador to Colombia, chiefly in the central and western Cordilleras. In *E. orthostemon*, however, pubescence is of more general occurrence on the flowers and pedicels, the leaves are larger (up to 3.5 cm. wide and 6–7 cm. long) and lack the cartilaginous margins, prominent glands and

mucronate tips which characterize the leaves of *E. cartilaginea*. The latter is similar in many respects, on the other hand, to *E. myrsinoides*, from which it may be distinguished by the characters given in the key. Univ. of Mich. Neg. 445.

Junín: Valley of the Río Mantaro near Huachicna, elev. 2,300 meters, *Weberbauer 6548*.—Huancavelica: Pampas–Salcabamba trail, elev. 2,500 meters, *Stork & Horton 10443* (F, type).

Myrcianthes compressa (HBK.) McVaugh, comb. nov. *Myrtus compressa* HBK. Nov. Gen. & Sp. 6: 135 (folio ed. p. 107). 1823. *Eugenia? compressa* (HBK.) DC. Prodr. 3: 276. 1828. *Amyrsia compressa* (HBK.) Kausel, Ark. Bot. ser. 2, 3: 513. 1956.

A tree or shrub with compressed branchlets, nearly glabrous, the young shoots finely pale-strigose, the peduncles finely bristly-pubescent, the petals and calyx-lobes ciliate; leaves obovate, up to 3 cm. wide and 5 cm. long, obtuse or rounded at the tip, the base cuneate and the margins decurrent on the channeled petiole 3–4 mm. long; midvein impressed above, prominent beneath; lateral veins 10–12 pairs, rather inconspicuous, slightly elevated on both sides, more prominent beneath; marginal vein about equaling the laterals and slightly arched between them, 1–1.5 mm. from the margin; blades lustrous, smooth and almost without apparent glands above, dull and paler, and usually gland-dotted beneath; inflorescence an axillary 3-flowered dichasium, the peduncle about 2.5 cm. long, compressed, slender, less than 1 mm. wide near the summit, the lateral branches 1.5–3 mm. long; bracts and bracteoles fallen before anthesis; buds 3.5–4 mm. long, glabrous, turbinate; [flowers said to be the same size as those of *M. discolor*, therefore the style 6–8 mm. long, the disk 3–3.5 mm. wide]; calyx glabrous, glandular-punctate (Kunth), the lobes unequal, concave, suborbicular, about 2.5–3 mm. wide; stamens about 175 (according to Kunth); petals (Kunth) suborbicular, concave, glabrous, much longer than the calyx; ovary (Kunth) bilocular, with about 15 centrally attached ovules in each locule.—A doubtful species, apparently collected by Bonpland only, which seems closely related to *Myrcianthes discolor* but differs in having the leaves obovate and cuneate and the peduncle minutely bristly. See also a note under *M. foliosa*. F.M. Neg. 36879.

Cajamarca: Near Cajamarca, *Bonpland*, type.

Myrcianthes discolor (HBK.) McVaugh, comb. nov. *Myrtus discolor* HBK. Nov. Gen. & Sp. 6: 134 (folio ed. p. 107). 1823.

M. bicolor HBK. l.c. *pl. 540. Eugenia? discolor* (HBK.) DC. Prodr. 3: 277. 1828.

Shrub up to 2 meters high, completely glabrous except the very youngest leaves which are sparingly strigose, the ciliate petals and calyx-lobes, the bristly stamen-ring and the appressed-pubescent inner surface of the calyx-lobes; leaves mostly elliptic, varying to ovate or obovate, 1.5–3.5 cm. wide, 3–5 cm. long, 1.5–2 times as long as wide; blades at tip acute or blunt or less often broadly short-acuminate, at base rounded or subcuneate, the margins shortly decurrent on the stout petiole 3–5 mm. long; midvein impressed above, prominent beneath; lateral veins 10 pairs or fewer, somewhat raised on both surfaces, often obscure above in mature leaves; marginal vein continuous, 1–2 mm. from the margin, about equaling the laterals and somewhat arched between them; leaves often browning in drying, the upper surface smooth and markedly lustrous, sometimes sparingly impressed-punctate, the lower surface paler and dull, somewhat gland-dotted; inflorescence a simple axillary dichasium, consistently 3-flowered, drying green or brownish, rarely purplish; peduncle slender, 1.5–3 (–5) cm. long, flattened distally, 1.5 (–1.8) mm. wide at summit; terminal flower ebracteolate and sessile, the lateral ones bracteolate and on slender divaricate bracteate pedicels (3–) 5–9 mm. long; bracts and bracteoles subulate or linear, 2–2.5 mm. long, deciduous at anthesis or before, leaving prominent auricle-like scars; calyx-lobes 4, broadly rounded, strongly concave, about 2.5 mm. wide, 2 mm. long; disk flat, 3–3.5 mm. wide, the center glabrous; style glabrous, or sparingly hairy when young, 6–8 mm. long; stamens about 90–100, 6–8 mm. long; petals white, turning rose in age, broadly elliptic, ciliate, 4–4.5 mm. long; fruit unknown. —F.M. Neg. 36886.

Libertad: Abajo de Parcoy, 2,800 meters, *Weberbauer 7085.*— Amazonas: Lamud, *H. de Cavasco s.n.* (USM 13158); Chachapoyas, *Mathews 1452.*—Cajamarca: Celendin, subida del Marañón, *Ferreyra 1130.* Prov. Cajamarca, elev. 2,750 meters, *Velarde Nuñez 3000.* San Felipe, Provincia Jaen de Bracamoros, *Bonpland*, type. Between Huambos and Montán, 2,300–2,600 meters, *Weberbauer 4213.*

Certain collections from southern Bolivia (Tarija, *West 8312*) are scarcely to be distinguished from *M. discolor.* The fruit is black-purple (West), with the seed 6–7 mm. long, the cotyledons distinct, fleshy, plano-convex, the radicle accumbent and about half as long as the seed. This Bolivian plant is apparently to be referred to

Eugenia pseudo-mato Legrand, originally described from northern Argentina (Lilloa 10: 477. 1944).

Myrcianthes ferreyrae (McVaugh) McVaugh, comb. nov. *Eugenia ferreyrae* McVaugh, Fieldiana Bot. 29: 209. 1956.

A shrub, or a tree up to 6–7 meters high, the branchlets, vegetative buds, inflorescence and young leaves rather densely strigose with stiff straight appressed white or brownish hairs up to 0.5 mm. long; branchlets somewhat compressed, those of the second year pale gray-brown, smooth; leaves broadly elliptic, ovate or obovate, 0.8–1.4 cm. wide, 1–2 cm. long, 1.2–1.9 times as long as wide, obtusely pointed to rounded or emarginate at tip, rounded to the base, where shortly decurrent on the channeled petiole 2–3 mm. long; midvein impressed above near base, prominent beneath; minor veins inconspicuous in mature leaves, apparent in young leaves, the laterals 6–8 pairs, the marginal vein about equaling the laterals and arched between them, about 1 mm. from the margin; blades coriaceous, sometimes drying bluish- or grayish-green above and dark reddish-brown beneath; upper surface smooth, polished, sparingly impressed-puncticulate; lower surface dull, obscurely glandular at maturity (evidently so in young leaves); margins thickened and somewhat revolute; inflorescence a simple 3-flowered dichasium with the central flower sessile, or the lateral flowers mostly suppressed and nearly all the flowers solitary in the axils; peduncle 7–10 mm. long, distally compressed and 1 mm. wide at the summit; pedicels divaricate, 2–4 mm. long; bracts and bracteoles apparently early deciduous; hypanthium in anthesis probably campanulate, 2 mm. long; calyx-lobes conspicuous, coriaceous, broadly ovate or rounded to short-oblong with rounded or bluntly pointed tips, strigose within or glabrous in age, about 2.5 mm. wide at base, 2–3 mm. long; disk in post-anthesis 3 mm. wide, glabrous; style 7–9 mm. long, glabrous; stamens probably about 50, as long as the petals; anthers 0.5 mm. long; petals broadly elliptic or obovate, 4–5 mm. long, 4 mm. wide, glabrous without, sparingly strigose within, fringed at tips; ovary bilocular, the ovules about 15 in each locule, radiate in a subcapitate group attached to the central partition near the summit of the ovary; seeds 1 or 2, about 7 mm. long, 5 mm. wide and 3 mm.(?) thick, with delicate membranaceous testa easily separated from the cotyledons and from the surrounding tissues; cotyledons unequal, plano-convex, nearly or quite distinct; plumule 1 mm. long, hairy; radicle accumbent, tapering-cylindrical, about 0.5 mm. thick at base, 2.5 mm. long; fruit probably globose or nearly so, glabrous at maturity

(short-pubescent when young), about 7 mm. in diameter, crowned by the upright calyx-lobes.—This species is of unusual interest, as coming from an arid area of southern cis-Andean Peru, where no other native species of Myrtaceae is known to occur. Univ. of Mich. Neg. 427.

Arequipa: Prov. Caravelí, Lomas de Chaparra, 500–560 meters, falda de cerro, Oct. 19, 1946, *Ramón Ferreyra 1483* (USM, type). Southeast of the port of Chala, highway to Chaparra, 600–750 meters, *Ferreyra 11450*. Prov. Camara, south of Chala, steep quebrada 5 km. from the ocean, 700–800 meters, *Worth & Morrison 15698*.—Without definite locality, *Maclean* (herb. Kew).

Myrcianthes fimbriata (HBK.) McVaugh, comb. nov. *Myrtus fimbriata* HBK. Nov. Gen. & Sp. 6: 137 (folio ed. p. 109). 1823. *Eugenia? fimbriata* (HBK.) DC. Prodr. 3: 278. 1828.

A shrub or small tree, sparingly silky-strigose on the young leaves and branchlets and on the hypanthium and calyx (calyx-lobes heavily ciliate-fringed, and densely appressed-pubescent on the inner surface); leaves subrotund-ovate or subrotund-elliptic, 1.5–3.5 cm. wide, 2.8–5 cm. long, 1.2–2 times as long as wide, abruptly short-acuminate with deltoid tip, or merely obtuse and mucronate, rounded at base and the margins decurrent on the inner angles of the deeply channeled but nearly terete petiole 1 (–2) mm. thick, 6–7 mm. long; midvein impressed above, prominent beneath; lateral veins about 10 pairs, obscure above, evident beneath but scarcely more prominent than the prominently reticulate small veins; marginal vein about equaling the laterals and strongly arched between them, 0.5–3 mm. from the margin; all the veins of the lower surface enlarged, somewhat raised in a conspicuous reticulum, the margins of the veinlets not sharp but appearing as if fused and softened; blades concolorous, lustrous, eglandular; inflorescence a slender axillary 3- to 7-flowered dichasium, the peduncles 4.5–9 cm. long, compressed, up to 2.5 mm. wide near the summit, the lateral branches 1–2 cm. long, often unilateral and often strongly ascending; terminal flowers not closely sessile, their pedicels up to 3 mm. long; bracteoles linear, 3 mm. long, deciduous, like the bracts, before anthesis; buds 4–5 mm. long, pyriform, the hypanthium narrowly campanulate; calyx-lobes bluntly triangular, subequal, about 2 mm. long and wide; disk 3 mm. wide, sparingly pilose; style 4.5–5 mm. long; stamens about 75, 5–6.5 mm. long, the anthers 0.4 mm. long; petals obovate-elliptic, ciliate-fringed and pubescent outside, 3.5–4.5 mm. wide, 5.5 mm. long; ovary (according to Kunth) bilocular, with about 15 ovules in each locule,

these affixed to the convex placentae on the central axis; fruit not seen.—This species, readily recognized at sight because of the distinctive venation of the leaves, is known only from the collections cited below, which are geographically widely separated. The type locality of *Myrtus fimbriata* was not stated specifically by Kunth, who wrote merely "Crescit cum praecedente" [i.e. with *Myrtus limbata*, stated by Kunth to have come from Ayavaca]. It is possible that the type specimens of *M. fimbriata* were taken by Bonpland not at Ayavaca but at some more southern locality on the explorers' route to Lima, e.g. at some point near Trujillo where they approached the coast; Weberbauer's locality for the plant is in this same general area. F.M. Neg. 36889.

[Piura: Ayavaca], *Bonpland*, type (see discussion above).— Libertad: Entre Usquil y la Hacienda Capachique, 2,800–2,900 m., monte bajo compuesto de arbustos, July 10, 1914, *Weberbauer 7003*.— Amazonas: Huancas ["Guancas"], *Mathews 1450*.—Cajamarca: La Colmena–Llama (Cutervo), 9000 feet, *Sandeman 4138, 4149*.

Myrcianthes foliosa (HBK.) McVaugh, comb. nov. *Myrtus foliosa* HBK. Nov. Gen. & Sp. 6: 134 (folio ed. p. 106). 1823. *Eugenia? foliosa* (HBK.) DC. Prodr. 3: 277. 1828. *Amyrsia foliosa* (HBK.) Kausel, Ark. Bot. ser. 2, 3: 513. 1956.

Shrub 0.5–2 meters high, or treelike, up to 4 meters high, usually nearly glabrous, the branchlets, young leaves, and inflorescence sparingly strigose with pale hairs up to 0.3 mm. long; leaves often approximate, nearly sessile, variable in shape, broadly elliptic to ovate or rotund, 0.8–2.5 cm. wide, 1.2–4 cm. long, 1.5–2 times as long as wide, or occasionally as wide as long; blades acutely pointed (and then often mucronate), or rounded or less often emarginate at tip, rounded or somewhat cordate at base, the margins decurrent on the very short stout petiole which is 1–2 mm. thick, 1–2 (–3) mm. long, somewhat dorso-ventrally compressed; midvein somewhat impressed above, prominent beneath; lateral veins 10 pairs or fewer, slightly raised on both surfaces or often obscure; marginal vein continuous, about equaling the laterals but often curved and appearing as a series of arches between the adjacent veins, the greatest distance from the margin 0.5–1.5 mm.; leaves often browning in drying, the upper surface smooth and markedly lustrous, the lower dull, sparingly gland-dotted; inflorescence a simple axillary dichasium, regularly 3-flowered but occasionally 1-flowered by abortion of the lateral buds, and rarely 7-flowered by proliferation of these buds; peduncle 10–20 (–25) mm. long or reduced to 4 mm. in 1-flowered dichasia,

compressed below the summit and there 1–1.2 mm. wide; terminal flower ebracteolate and sessile, the lateral ones bracteolate and on bracteate divaricate pedicels 3–4.5 (–6) mm. long; bracts usually deciduous before anthesis, glabrous, subulate, 2.5–3.5 mm. long, or rarely linear, 1 mm. wide and 6 mm. long; bracteoles usually deciduous before anthesis, like the bracts but often slightly shorter, both bracts and bracteoles leaving prominent auricle-like scars at abscission; calyx-lobes 4, in slightly unequal pairs, appressed-pubescent within, ciliate, bluntly triangular, 1.5–2 mm. long and wide; disk with slightly depressed center, glabrous, somewhat 4-angled, 2.5 mm. wide; style glabrous, often uncinate, 5–6 mm. long; stamens about 50, 4–5 mm. long; anthers about 0.5 mm. long; petals white, elliptic, ciliate, 4.5–5 mm. long; ovary bilocular, the ovules 10–15 in each locule, radiate in a subcapitate group affixed to the central axis; fruit smooth, globose or oblate, 5–7 mm. thick, orange-red when ripe (Popenoe); cotyledons distinct, plano-convex; plumule present; radicle about half as long as the cotyledons.—This species is well known and has been often collected in central Colombia, from Cundinamarca to Santander del Norte. A collection from southern Ecuador (San Vicente, *Espinosa E-1285*) has been tentatively referred here but also resembles *M. compressa* in having leaves which tend to be cuneate at base. The description given above is based on Colombian specimens. F.M. Neg. 36888.

Peru (possibly). Central Colombia and (?)Ecuador.

Myrcianthes hallii (Berg) McVaugh, comb. nov. *Eugenia hallii* Berg, Linnaea 27: 250. 1856. *Amyrsia hallii* (Berg) Kausel, Ark. Bot. ser. 2, 3: 513. 1956.

Shrub or tree to 8 meters high, nearly glabrous, the branchlets, young leaves and inflorescence sometimes sparingly pale-strigose; hypanthium densely pale-strigose; leaves sometimes approximate, ovate or broadly elliptic, 0.8–2 cm. wide, 1.3–2.7 cm. long, 1.3–1.8 times as long as wide; blades broadly and bluntly short-acuminate to rounded or merely acute at tip, the base rounded and shortly cuneate, the margins decurrent on the stout petiole 1.5–3 mm. long; midvein impressed above, slightly raised beneath; lateral veins 5–8 pairs, slightly raised on both surfaces, or usually obscure; marginal vein obscure, about 1 mm. from the margin, arching between the laterals; leaves often browning in drying, the upper surface smooth and markedly lustrous, the lower dull; glands apparent in young leaves, but at maturity inconspicuous, often apparent beneath, the upper surface sparingly impressed-punctate or smooth; inflorescence

an axillary dichasium, regularly 3-flowered, sometimes 1-flowered; peduncle (5–) 10–20 mm. long, flattened near the summit and there 1.5–2 mm. wide; terminal flower ebracteolate and sessile, the lateral ones bracteolate and on bracteate divaricate pedicels (1–) 2.5–4 mm. long; bracts and bracteoles usually deciduous before anthesis, leaving prominent auricle-like scars at abscission, the bracteoles lanceolate, 2 mm. long, acute; calyx-lobes 4, glabrous or nearly so without, appressed-pubescent within, ciliate, broadly rounded to bluntly triangular, 3 mm. long, 2.5–3 mm. wide; disk 3 mm. wide, with depressed glabrous center, somewhat 4-angled, the staminal ring somewhat hairy; style glabrous, 7–8.5 mm. long; stamens about 50, up to 8–9 mm. long; petals white, elliptic, 5–6 mm. long; ovary bilocular, the ovules 6–11 in each locule, attached above the middle of the central axis and tending to be pendent; fruit purple (Hall), smooth or nearly so, globose or oblate, about 1 cm. in diameter, about 2-seeded; cotyledons distinct, plano-convex; plumule present, small; radicle stout, accumbent, 2 mm. long.

Peru (probably). Central Ecuador to southern Colombia, often cultivated.

A plant, known from but a single collection (Marin, no. 1581, from an elevation of 3,700 meters, near Peñas, Cuzco, Peru), is similar but differs in some respects and may represent a distinct species. The branchlets and the whole inflorescence are heavily strigose with pale hairs, the style and stamens are more than 10 mm. long, and the stamens are probably more than 100 in number.

Myrcianthes indifferens (McVaugh) McVaugh, comb. nov. *Eugenia indifferens* McVaugh, Fieldiana Bot. 29: 211. 1956.

A tree or shrub, glabrous or the branchlets and at least the young leaves pubescent with appressed or irregularly spreading pale or brownish stiff hairs up to 0.6 mm. long, the inflorescence always glabrous or very nearly so; leaves ovate to broadly elliptic or suborbicular, rigidly coriaceous, 1–2 cm. wide, 1.3–3 cm. long (on older branches up to 4.5 cm. wide, 6 cm. long), 1.3–1.5 (1–2) times as long as wide, the tips blunt-pointed, rounded or retuse, the base rounded and the margins decurrent on the flattened and channeled petiole 1–2 mm. wide, 2–3 mm. long; midvein impressed above at least near base, prominent beneath; lateral veins 8–10 pairs, with some additional intermediate ones, obscure on both sides but sometimes slightly elevated, the marginal vein obscure, slightly arched between the laterals, about 1–2 mm. from the margin; blades smooth and lus-

trous above, paler and dull beneath; glandular dots not apparent in mature leaves; inflorescence axillary on new leafy branches, the peduncles (5–) 10–20 mm. long, compressed, up to 1.5–2 mm. wide at apex, a few 1-flowered, or those in the lower axils 2- or 3-flowered with the central flower sessile, the lateral ones on pedicels (1–) 4–8 mm. long; bracts and bracteoles ciliate, subulate, 2 mm. long or more, mostly deciduous before anthesis and leaving prominent projecting auriculate scars; buds 3–6 mm. long, obovoid, the hypanthium broadly obconic, smooth, glabrous; calyx-lobes 1.5–2 mm. long, silky inside, sometimes obscurely cuspidate, in unequal pairs, the outer pair thicker, sometimes rounded-triangular, 2.5–4 mm. wide, the inner broadly rounded, ciliate, with thin margins, 3–5 mm. wide; disk 3.5–4 mm. wide, glabrous or the staminal ring hairy; style 6.5–8 mm. long; stamens about 250 to more than 300, up to 8 mm. long, the anthers 0.4–0.6 mm. long; petals obovate, fringed, 5–8 mm. long; ovary bilocular, the ovules 18–20 in each locule, radiate in a subcapitate group affixed to the central axis.—Univ. of Mich. Negs. 442, 1093.

Huánuco: Sierra de Chaqlla, region of Huánuco and Panao, 10,000 feet, *Sandeman 5103*.—Cuzco: Urubamba Valley, Hacienda Fanccac, 2760 meters, Sept. 10, 1928, *F. L. Herrera 2099* (US, type).

The collection by Sandeman (Herb. Kew) differs from the type in being completely glabrous and in having the flowers very slightly larger in most parts. The two collections agree well in other characters, however, and in the large number of stamens, a feature unique in this group of *Myrcianthes*.

Myrcianthes lanosa McVaugh, sp. nov.

Arbor tomentosa, foliis 3.5–8 cm. longis coriaceis, late ellipticis vel obovatis, rotundatis retusisve, vel obtuse acuminatis; venis inconspicuis, nervo medio supra ad basin paullo impresso; dichasio plerumque 7-floro, floribus in dichotomis sessilibus, hypanthiis longitudinaliter sulcatis; pedunculo 3–6 cm. longo, compresso, apicem versus usque ad 2–3 mm. lato; alabastris 8–9 mm. longis; stylo piloso 11 mm. longo.

A tree, softly and densely tomentose, the young growth, inflorescence and lower leaf surface (at least when young) covered with gray or yellowish-white crisped hairs up to 1 mm. long; leaves rigidly coriaceous, broadly elliptic or obovate, 2.5–5 cm. wide, 3.5–8 cm. long, 1.4–2 times as long as wide, rounded or even retuse to bluntly acuminate at tip, rounded at base and then finally attenuate, the margins

involute when dry, shortly decurrent on the compressed tomentose petiole 1.5–2 mm. wide, 7–10 mm. long; midvein slightly impressed above at base, tardily glabrate; lateral veins about 10 pairs, scarcely distinguishable from the intermediate ones, slightly raised above the upper surface, and similarly on the lower; marginal vein about equaling the laterals and forming short angular arches between them, 2–5 mm. from the margin; blades glossy as if varnished above, dull and paler beneath, with glands not apparent on either surface; inflorescence an axillary dichasium, usually 7-flowered (by reduction 3- to 6-flowered), the peduncle 3–6 cm. long, compressed distally and there 2–3 mm. wide; secondary peduncles divaricate, 3–10 mm. long; bracts deciduous before anthesis; bracteoles linear-elliptic, blunt-pointed, 0.7 mm. wide, 2 mm. long; buds 8–9 mm. long, obconic, the conic hypanthium 4–5 mm. long, its 4 prominent angles alternating with the calyx-lobes and 4 lesser angles between; calyx-lobes 4, in unequal pairs, lanate outside, finely and densely so inside, the outer pair broadly ovate-triangular, bluntly pointed, 4 mm. long and wide, the inner pair broadly rounded, thin-margined, 5 mm. wide and 4 mm. long; disk about 5 mm. wide, tomentose; style hairy, 11 mm. long; stamens 250–300, up to 7–8 mm. long, the anthers 0.6 mm. long; petals obovate, glabrous, about 7 mm. wide, 8 mm. long; ovary bilocular, the ovules about 15 in each locule, radiate in a subcapitate group attached near the middle of the central partition; fruit not seen.—Univ. of Mich. Neg. 1099.

Cajamarca: Llama (Cutervo), 8000 feet elevation, full exposure, *C. Sandeman 4214* (herb. Kew, type).

Myrcianthes limbata (HBK.) McVaugh, comb. nov. *Myrtus limbata* HBK. Nov. Gen. & Sp. 6: 136 (folio ed. p. 108). 1823. *Eugenia? limbata* (HBK.) DC. Prodr. 3: 278. 1828. *Amyrsia limbata* (HBK.) Kausel, Ark. Bot. ser. 2, 3: 513. 1956.

A small, compactly branched tree, thinly (the hypanthium densely) appressed-puberulent with pale sordid straight hairs 0.2–0.3 mm. long; leaves elliptic-oblong, 1.5–2.5 cm. wide, 2.5–5 cm. long, mostly 1.6–2 times as long as wide, about equally narrowed to the bluntly short-acuminate or acute tip and to the acute base, the margins thickened, decurrent on the channeled petiole 1 mm. thick, 3–5 mm. long; midvein slightly impressed above near base, prominent beneath; lateral veins about 10 pairs, with some additional intermediate veins, somewhat elevated on both sides; marginal vein a little weaker than the laterals and arched between them, 1–2 mm. from the margin; blades coriaceous, dark green, smooth and some-

what lustrous above, with glands scarcely apparent in mature leaves; lower surface paler, dull, dotted with dark glands; inflorescence an axillary 3- to 7-flowered dichasium, these sometimes aggregated near the tips of the branches; peduncles 1.5–2.5 cm. long, somewhat compressed, about 1.5 mm. thick near the summit; lateral branches divaricate, 4–7 mm. long; pedicels, if developed, about 3 mm. long; sessile terminal flowers present and conspicuous; bracts and bracteoles deciduous before anthesis; buds 5–6 mm. long, pyriform, the hypanthium campanulate, whitened by the thickly appressed hairs; calyx-lobes 2.5–3 mm. long and wide, reflexed in anthesis, markedly unequal, the outer pair bluntly triangular, longer than wide, the inner pair broadly rounded, thin-margined, wider than long; all lobes sparingly puberulent and gland-dotted outside, finely appressed-pubescent inside; disk quadrangular, 3.5–4 mm. wide, the short-hairy staminal ring very broad and large in proportion, 1–1.5 mm. wide, the depressed center of the disk 1.5 mm. wide, pilose; style 6–7 mm. long, hairy near base; stamens yellowish white (Espinosa), about as long as the style, very numerous (about 230 according to Kunth), the anthers 0.3 mm. long; petals about 5 mm. long, suborbicular, concave, appressed-silky inside; ovary bilocular with each locule containing about 16 ovules attached to the central axis (Kunth); fruit not seen, purple (Espinosa).—A species seemingly of limited geographical distribution, thus far known only from the type, and from a collection made by Espinosa (no. 1334) in southern Ecuador about 75 km. north of the type locality. F.M. Neg. 36892.

Piura: Ayavaca, *Bonpland* (type). Southern Ecuador. A specimen from Río San Bernardo, Junín, *Weberbauer 6558* (NY; US, *p.p.*) is perhaps of this species but the plants are in over-mature fruit and indeterminable.

Myrcianthes lindleyana (HBK.) McVaugh, comb. nov. *Myrtus lindleyana* HBK. Nov. Gen. & Sp. 6: 138 (folio ed. p. 110). 1823. *Eugenia? lindleyana* (HBK.) DC. Prodr. 3: 278. 1828.

A compact, densely branched shrub or tree to 3.5 meters high, the trunk sometimes more than 30 cm. in diameter (Macbride); youngest growth and inflorescence heavily pubescent with soft whitish spreading hairs 0.5–1 mm. long; leaves glabrous or with a few hairs persisting beneath, obovate or elliptic, 1–2.5 cm. wide, 1.5–3.5 (–5) cm. long, 1.5–2 times as long as wide, rounded or retuse or sometimes bluntly pointed at the tip, acute or cuneate at the base, the strongly thickened margins decurrent on the stout pale com-

pressed petiole 1–1.5 mm. thick, 2–2.5 mm. long; midvein impressed above, prominent beneath; lateral veins 5–10 pairs, slightly elevated both sides or a little impressed above; marginal vein about equaling the laterals and arched between them, 1–2 mm. from the margin; blades smooth and lustrous above, dull and paler beneath, the glands not apparent in mature leaves; dichasia up to about 5 cm. long, 2 to 3 times compound, axillary or forming a subcorymbose terminal cluster; peduncles 2–3.5 cm. long, flattened distally and 2 mm. wide near the summit, with 2 or usually 4 subequal branches in addition to the terminal sessile flower; flowers mostly near tips of branches, nearly sessile; bracts and bracteoles deciduous about at anthesis, 2–4 mm. long, lanceolate or subulate, sparingly pubescent; buds 4–6 mm. long, the hypanthium narrowly campanulate; calyx-lobes in 2 unequal pairs, the tips gland-dotted and sometimes glabrate, the inner surface appressed-pubescent; inner pair broader, suborbicular, 2–3 mm. wide and about as long, ciliate-fringed; disk about 3 mm. wide, glabrous except the sparingly hairy staminal ring; style about as long as the stamens, glabrous; stamens about 75 (about 140, according to Kunth), up to at least 7 mm. long, the anthers 0.5 mm. long; petals glabrous, obovate, 4 mm. long, ciliate; ovary 2- (or 3-?) locular, with about 20 ovules in each locule, these radiating from a short placenta on the central axis; fruit not seen.—F.M. Neg. 36893.

Cajamarca: San Felipe, prov. Jaen de Bracamoros, *Bonpland*, type. —?Huánuco: Mito, *Macbride & Featherstone 1574*. "Carapachu."

Eugenia minimifolia McVaugh, Fieldiana Bot. 29: 213. 1956.

A much-branched sclerophyllous shrub 2 meters high, with the numerous white flowers near the tips of the branches; branchlets, inflorescence, and young leaves closely appressed-strigose with gray or brownish hairs up to 0.5 mm. long; leaves vernicose, coriaceous, obovate or elliptic, 2–3.5 mm. wide, 2.5–6 mm. long, 1.5–2 times as long as wide, round-tipped to obtusely pointed or emarginate, sometimes with a blunt terminal glandular mucro which may be slightly subterminal and dorsal; base of blades rounded and the margins shortly decurrent on the stout compressed black petiole 0.5–0.6 mm. thick, 1–1.5 mm. long; blades often involute toward the base and appearing cuneately narrowed when dry; midvein obscure above except near base, prominent on lower surface; lateral and marginal veins not apparent; leaves drying yellowish green, varnished above, concolorous, the upper surface impressed-punctate, the lower dull, impressed-punctate, with raised and somewhat lustrous midvein and strongly thickened, somewhat involute margins; flowers solitary,

axillary, the pedicels in anthesis stout, compressed, 2–3 mm. long and 0.5 mm. thick; bracteoles lanceolate, glabrous or nearly so, persistent through anthesis, about 1 mm. long, appressed to the broadly obconic base of the hypanthium; buds 3.5 mm. long, the hypanthium less than half this, densely strigose; calyx-lobes broadly rounded, about 1.7 mm. wide, 1 mm. long, glabrous both sides; disk somewhat quadrangular, more than 1.5 mm. wide, glabrous; style 5.5–6 mm. long, glabrous; stamens about 125, up to 6 mm. long, the anthers 0.4 mm. long; petals oblong-obovate, about 3 mm. wide, 4 mm. long; fruit not seen; ovary bilocular, with about 10 ovules on each face of an axile placenta.—Univ. of Mich. Neg. 443.

Huancavelica: Prov. Tayacaja, Cerros en el lado izquierdo del Río Mantaro, encima del puente de Chiquiac, 2,600–2,700 meters, low open mountain sides covered with evergreen shrubs, Mar. 15, 1913, *A. Weberbauer 6500* (US, type).

Eugenia myrsinoides (HBK.) Burret, ex Diels, in Biblioth. Bot. Heft 116: 115. 1937; Notizbl. Bot. Gart. Berl. 15: 495. 1941. *Myrtus myrsinoides* HBK. Nov. Gen. & Sp. 6: 132 (folio ed. p. 105). 1823. *Myrteola myrsinoides* (HBK.) Berg, Linnaea 27: 396. 1856. *Eugenia Weberbaueri* Diels, Bot. Jahrb. 37: 598. 1906, in part?

A shrub 1–3 meters high, nearly glabrous, the young growth sparingly or densely and the leaves and hypanthium sometimes sparingly, strigose with pale or blackish flexuous hairs up to 0.5 mm. long; leaves coriaceous, broadly elliptic or obovate, 3.5–11 mm. wide, 7–16 mm. long, 1.5–2.4 times as long as wide, the tip bluntly pointed, rounded or emarginate, the base cuneate, the margins thickened, decurrent on the stout petiole 1 mm. thick, 1.5–2 mm. long; midvein usually impressed above, prominent beneath, the other veins obscure, hardly apparent in dried specimens; lateral veins 6–10 pairs, the marginal vein less than 0.5 mm. from the margin; blades smooth and lustrous above, green, darkening in drying, without evident glands; lower surface drying greenish-brown, roughened by small dark glands; flowers solitary, axillary, the pedicels 2–6 (–15) mm. long, compressed distally and there nearly 1 mm. wide; bracteoles deciduous at anthesis, linear-subulate, 2–2.5 mm. long; bud 4–6 mm. long; calyx-lobes broadly rounded, 2–2.5 (–3) mm. wide, 2–2.5 mm. long, sparingly strigose or glabrous within; disk 2–2.5 mm. wide, glabrous, somewhat quadrangular; style 5 (–9) mm. long; stamens 75–100, the filaments white, 4–5 mm. long, the anthers 0.3 mm. long; petals concave, nearly orbicular, white, about 6 mm. long.—An imperfectly known species, of uncertain generic position, but probably

related to *E. cartilaginea* and to *E. triquetra* (see pp. 754, 774). Weberbauer's no. 4244, which is slightly more pubescent than the other collections cited below, has longer pedicels and slightly larger flowers also, but seems otherwise closely similar. F.M. Negs. 23599, 36896.

Piura: Páramo de Guamani, between Ayavaca and Huancabamba, *Bonpland*, type.—Cajamarca: Between Cajamarca and Celendín, 3,300–3,400 meters, *Weberbauer 4244*, syntype of *E. weberbaueri;* [above San Pablo, *Weberbauer 3811*, syntype of *E. weberbaueri*, herb. Berlin, not seen].—Locality uncertain: Hua[t?]asco, *Fl. H[uayaquilensis], nos. 441, 947*, anno 1809 (herb. Barbey-Boissier, coll. Tafalla?). Southern Ecuador. "Zhiripi" (Steyermark), "Rumilanche" (Weberbauer).

Eugenia myrtomimeta Diels, Engl. Bot. Jahrb. 37: 598. 1906.

Shrub or small tree to 10 meters high, pubescent on the branchlets, vegetative buds, and peduncles, and sparingly on the hypanthium and on the younger leaves, especially midveins and margins, with colorless or pale yellowish erect or antrorsely curved hairs up to 0.5 mm. long; branchlets yellowish-brown, usually prominently glandular-dotted; leaves elliptic or occasionally obovate, 5–13 mm. wide, 13–25 mm. long, 2–2.3 times as long as wide, about equally narrowed to both ends, acutely pointed from near or above the middle, rounded or subcuneate at base, the margins slightly decurrent on the stout petiole up to nearly 1 mm. thick, 1–1.5 (–2) mm. long; midvein narrowly and inconspicuously impressed above, prominent beneath, the other veins obscure; lateral veins 4–5 pairs, distant, arched distally and forming a marginal vein 1–2 mm. from the margin; blades drying pale yellowish-green, nearly concolorous, the upper surface lustrous, sparingly and usually inconspicuously impressed-puncticulate, the lower surface conspicuously glandular when young, obscurely so in age; flowers solitary, axillary, the pedicels filiform, (7–) 12–20 mm. long, 0.5 mm. thick, sparsely tuberculate with raised glandular dots; bracteoles strigose, linear, 0.3 mm. wide, 2–2.5 mm. long, scarious, falling before anthesis when the buds are unexpanded and about as long as the bracteoles (rarely foliaceous, 1 mm. wide, 4 mm. long, subpersistent); mature buds 6–7 mm. long, the hypanthium obconic, prolonged at base into a poorly defined pseudostalk up to 0.5 mm. long; calyx-lobes rounded, ciliate, glabrous both sides, sometimes longer than wide, 2–3.5 mm. wide, 3–4 mm. long; disk 4-angled, glabrous, about 2 mm. wide; style glabrous, 5.5–7 mm. long; stamens 150–175, up to about 7 mm. long, the an-

thers 0.4 mm. long; petals obovate, ciliate, 6 mm. wide, 8–9 mm. long; ovary bilocular, the ovules 4–6 in each locule, ascending in 2 parallel rows on a centrally affixed placenta.—I am unable to find even the most trivial point of difference by which to separate this species from the Chilean *Myrceugenella chequen* (Mol.) Kausel; Burret (Notizbl. Bot. Gart. Berl. 15: 523. 1941) has also called attention to this similarity. Unfortunately all the numerous Peruvian specimens are in young flower only, and it has not been feasible to study the cotyledonary structure. It is possible that the Chilean plant was introduced into Peru at an early date and has subsequently spread widely in the highlands, in part through the agency of cultivation. Peruvian collections are noted variously as having come from cultivation, from roadsides, hedgerows, or near cultivated ground, but some have been taken from river banks and other native habitats. Curiously little variation is apparent among the Peruvian collections, practically all of which could have come from the same plant as far as their external features indicate; this suggests that many or most of the plants in Peru may have come from a relatively few original introductions. U. S. Nat. Herb. Neg. 4460.

Ancash: Huarás, 3,050–3,100 meters, *Proano 113*.—Junín: Inter Tarma et Palca ["Palea"], *Weberbauer 1737* (USM; type, herb. Berol., not seen). Between Palca and Acobamba, *Esposto* (USM). Tarma, 3,000–3,200 meters, *Killip & Smith 21910*. Valley of Tarma, *Mathews 887*. Above Huariaca, alt. 3,000 meters, *Seibert 2208*.—Huánuco: Mito, *Macbride & Featherstone 1374, 1943*. Tomaiquichua, 3 miles below Mito, 8,500 feet, *Macbride & Featherstone 2424*.—Lima: Lima, gardens, *Mathews 390*. San Mateo, Prov. Huarochiri, alt. 3,000 meters, *Goodspeed 33131, Ridoutt* (USM 11422).—Cuzco: Above Paucartambo, 12,000 feet, *Balls 6798*. Paucartambo, 3,300 meters, *Woytkowski 221*. Urubamba, 9,590 feet, *Pentland* (herb. Kew). Ollantaytambo, 3,000 meters, *Cook & Gilbert 769*.—Arequipa: Arequipa, hedge plant at Harvard Observatory, *Cook & Gilbert 62*.—"Arrayán," "arrayán de Castilla."

Myrcianthes oreophila (Diels) McVaugh, comb. nov. *Eugenia oreophila* Diels, Bot. Jahrb. 37: 597. 1906.

Tree 5–8 meters high, the young branchlets, vegetative buds, leaves and inflorescence conspicuously and often densely beset with closely appressed sordid white soft straight hairs up to 0.5 mm. long, the hairs often arachnoid-aggregated or matted, those on the under surface of the leaf at least in part dibrachiate, and often very short

(0.1–0.2 mm.), the closely appressed and matted hairs sometimes giving a slight lustre and an appearance as of a greasy or graphite-covered surface; leaves ovate to orbicular or reniform, 1–3 cm. wide, 1–4.5 cm. long, sometimes wider than long, but up to 1.7 times as long as wide (up to 4 cm. wide and 6 cm. long on shoots, where often ovate and shortly deltoid-acuminate), those nearest the base of the branchlets often smaller and suborbicular; blades blunt-pointed or rounded at tip, rounded at base, the margins thickened, somewhat cuneately decurrent on the stout petiole 1–1.5 mm. thick, 2.5–4 mm. long; midvein impressed above, prominent beneath; lateral veins 5–8 pairs, obscure above, elevated beneath; marginal vein slightly weaker than the laterals, comprising a series of short arches between them, 1–2 mm. from the margin; blades drying rigidly coriaceous, polished and pale olive-green above (or darker in immature leaves), dull and grayish-brown beneath; glands apparent above in young leaves, usually not seen in mature leaves; inflorescence an axillary 3-flowered dichasium, the central flower sessile, or the whole reduced to a single flower; peduncle 10–15 mm. long, compressed distally, 1–2 mm. wide near the summit; bracts linear, 1 mm. wide, 6 mm. long; lateral pedicels up to 6 mm. long; bracteoles linear-subulate or lanceolate, deciduous after anthesis, nearly glabrous, somewhat keeled, 2–4 mm. long; hypanthium densely white-hairy, 3–4 mm. long, obpyramidal, strongly 4-angled or with additional smaller intermediate angles; calyx-lobes deltoid, blunt-tipped, 3.5–4 mm. wide at base, about 3.5 mm. long, strigose without, sparingly strigose or nearly glabrous within; disk about 5 mm. wide, hairy near center; style glabrous, 7–8 mm. long; stamens about 150, up to 8 mm. long, the anthers 0.5 mm. long; petals obovate, about 7 mm. long; ovary bilocular, the ovules about 10 in each locule, in a subcapitate group attached above the middle of the central axis; fruit probably ellipsoid when mature; cotyledons distinct, plano-convex; plumule present; radicle about 2 mm. long, probably accumbent.

Cuzco: Piñasniocj, Panticalla Pass, 3,600 meters alt., *Cook & Gilbert 1231, 1863, 1887.* Urubamba Valley, Hacienda Fanccac, 2,760 meters, *Herrera 2099 p.p.* (US 1422429). Ollantaytambo, *Cook & Gilbert 385, 486, 542; Herrera 3382, 3424.* Valle Lares, Urubamba, *Soukup 37.* Urubamba, *Soukup 566.* Above Piri, way to Sta. Ana, 3,400 meters, *Weberbauer 4937* (type, herb. Berlin, not seen).

Myrcianthes osteomeloides (Rusby) McVaugh, comb. nov. *Myrtus osteomeloides* Rusby, Mem. Torr. Bot. Club 6: 36. 1896.

Myrtus myrciopsis O. Ktze. Rev. Gen. 3, pt. 2: 92. 1898. *Eugenia myrciopsis* (O. Ktze.) K. Schum. in Just, Bot. Jahresb. 26, pt. 1: 359. 1900. *Eugenia osteomeloides* (Rusby) McVaugh, Fieldiana Bot. 29: 214. 1956.

Densely branched shrub to 3 meters high, the vegetative parts glabrous or the leaf-buds, young leaves and branchlets sparingly or densely gray-strigose; inflorescence whitened by loosely appressed gray or yellowish hairs up to 0.3 mm. long; branchlets roughened with prominent elevated brownish glands which persist as the surrounding cortex sloughs off; leaves obovate, coriaceous, small, 3–7 (–10) mm. wide, 8–17 mm. long, usually about twice as long as wide (1.6–2.8), rounded or emarginate at the tips, cuneate at the base, narrowed to the stout petiole 1–2 mm. long; midvein slightly impressed above and raised beneath; lateral veins about 6–10 pairs, obscure, sometimes slightly raised and apparent on the upper surface, usually invisible beneath; marginal vein obscure; blades lustrous as if varnished above, and there dotted with sometimes impressed glands, dull and gland-dotted beneath; inflorescence a terminal cluster of about 100 flowers or less, formed by pairs of dichasia, 2 to 3 times compound, at the 4–6 uppermost nodes, usually only the lowest or two lowest fertile nodes leafy; dichasia usually about 2 cm. long, each with 2–3 nodes, the internodes 2–5 mm. long, the lateral flowers of the ultimate forks on pedicels 2 mm. long or less; bracts persistent, resembling reduced foliage leaves or lanceolate and 1.5 mm. long, strigose; bracteoles persistent, lanceolate, 0.7–1 mm. long; calyx-lobes 4, glabrous within, broadly rounded, 1.3–1.5 mm. wide, 0.7–1.3 mm. long; disk less than 2 mm. wide, the center glabrous, the staminal ring sometimes hairy; style glabrous, 3.5–4.5 mm. long; stamens about 35, 2.5–3 mm. long; petals white, elliptic, cucullate, 3 mm. long; fruit roughened with rounded glands, oblate, about 5 mm. thick, 4 mm. high; ovary bilocular, the ovules about 10 in each locule; seed 1, 5 mm. long, the cotyledons plano-convex, the radicle cylindrical, 1.5 mm. long.

Peru (probably). Bolivia.

Myrcianthes pearcei (McVaugh) McVaugh, comb. nov. *Eugenia pearcei* McVaugh, Fieldiana Bot. 29: 214. 1956.

An evergreen shrub 2–3 meters high, the branchlets, inflorescence and lower surface of the leaves densely rufous-tomentose with soft curved hairs; leaves coriaceous, elliptic-ovate, 3.5–5.5 cm. wide, 6.5–11 cm. long, about twice as long as wide, the tips rounded, obtuse

or bluntly pointed, the base acute or convexly acute or the sides converging at right angles, the margins decurrent on the channeled petiole 1.5–2 mm. thick, 12–20 mm. long; midvein channeled and tomentose above near the base, distally flat or with a narrow elevated median ridge, prominent beneath; lateral veins about 10 pairs, somewhat impressed above, prominent beneath, ascending and diminishing distally and abruptly incurving, 1–2 mm. from the margin, to join the next succeeding veins, the marginal vein scarcely recognizable as such except toward the tip of the blade; blades lustrous and hard-surfaced above, impressed-punctate, the lower surface obscured by the tomentum; inflorescence a dichasium 4–7 cm. long, 3 times compound, up to 15-flowered, the terminal flowers sessile, the peduncle 2.5–5 cm. long, compressed and up to 2 mm. wide near the summit; bracts and bracteoles deciduous, probably small and narrow; buds 4–5 mm. long, pyriform, the hypanthium campanulate; calyx-lobes rounded, somewhat unequal, tomentose on both surfaces, 3 mm. wide, 1.5–2.5 mm. long; disk somewhat quadrangular, 3–4 mm. wide, hairy, the center red-tomentose about the base of the style; style more than 5 mm. long, pilose at least below the middle; stamens 200–250, about as long as the style, the anthers about 0.5 mm. long; petals concave, white, ciliate, lightly tomentose outside; ovary bilocular, the ovules 5 in each cell, collateral, pendent.—A very distinctive species, but unfortunately the only known specimen has been severely damaged by insects. The type was collected near Pata, Bolivia, by R. Pearce (BM). Univ. of Mich. Neg. 483.

Peru (probably). Bolivia.

Myrcianthes quinqueloba (McVaugh) McVaugh, comb. nov. *Eugenia quinqueloba* McVaugh, Fieldiana Bot. 29: 217. 1956.

A tree 4–6 meters high, the branchlets and inflorescence covered with appressed or ascending pale hairs to 0.8 mm. long, the hairs with reddish lumina, colorless sheaths and tips; leaves usually with a few hairs persistent on both surfaces, nearly sessile, broadly ovate to orbicular, 1.5–7.5 cm. long and wide, about as wide as long or even wider, or on growing branchlets a little longer than wide; blades usually rounded at the tip, sometimes obtuse, the base rounded to subcordate, the margins decurrent on the broad flat green petiolar base 2–3 mm. long and almost as wide; midvein flat above, or channeled near the base, prominent beneath but diminishing distally; lateral veins about 6 pairs, obscure above, elevated beneath at least when young, diminishing distally; marginal vein about equaling the tips of the laterals and strongly arched between them, 2–6 mm. from

the margin; blades concolorous, yellow-green and vernicose above, probably somewhat lustrous beneath, with small and often obscure dots on both surfaces; inflorescence an axillary dichasium, 3- or 7-flowered, the central flowers sessile; peduncle stout, up to 2 cm. long, compressed, 2 mm. wide near the tip; branches and pedicels compressed, 4–7 mm. long; bracteoles deciduous at anthesis, subulate, nearly glabrous, 3–4 mm. long; buds 5–6 mm. long, somewhat pyriform, the heavily pubescent, urceolate or campanulate hypanthium 3–4 mm. long; calyx-lobes 5, fleshy, glabrescent outside, finely appressed-pubescent near tips within, unequal; smaller (outer) lobes 2, suborbicular, 2 mm. long, 2–2.5 mm. wide; 3 larger lobes broadly rounded, 3 mm. long, 3.5 mm. wide; disk flat, 3–4 mm. wide, glabrous; style glabrous, 6 mm. long; stamens 75–100, hardly as long as the style, the anthers 0.6 mm. long; petals ovate, ciliate, white or yellowish (Ferreyra), 3.5–5 mm. wide, 5–7 mm. long; fruit probably ellipsoid, 1 cm. long or more; ovary bilocular, the ovules about 20 in each locule, radially attached to and externally directed from a short centrally affixed placenta; seeds 1 or 2, reniform, 4 mm. long or more (not seen mature), the testa free, membranaceous, the cotyledons fleshy, plano-convex, the radicle accumbent, at least half as long as the cotyledons.—The 5-merous flowers of this plant are unusual among the Andean species of this genus, and superficially suggest a relationship to the species of eastern warm-temperate South America. It is probable rather that the 5-merous condition has arisen independently in the two groups.

Lima: Prov. Huarochirí, arriba de San Bartolomé, monte bajo, 2,900–3,000 meters, Nov. 5, 1954, *Ferreyra 10417* (MICH, type); *Ferreyra 10424*. "Guayabillo."

Myrcianthes rhopaloides (HBK.) McVaugh, comb. nov. *Myrtus rhopaloides* HBK. Nov. Gen. & Sp. 6: 137 (folio ed. p. 109). 1823. *Eugenia? rhopaloides* (HBK.) DC. Prodr. 3: 278. 1828. *E. porphyroclada* Berg, Linnaea 27: 266. 1856.

Small compact tree up to 10 meters high, completely glabrous except that the very young leaves and branchlets are sparingly pale strigose, the petals and calyx-lobes are ciliate, the staminal ring is bristly-pubescent, and the calyx-lobes are markedly appressed-pubescent on the inner surface; branchlets sometimes, and inflorescence usually, drying reddish-purple; leaves variable in shape even on the same plant, elliptic to obovate or ovate, suborbicular or even broader than long, on flowering branches 2–4 (–5) cm. wide, 4–6 (–8) cm. long, mostly 1.5–2 times as long as wide, on shoots often larger

and relatively longer, up to 3.5–6.5 cm. wide, 8–13 cm. long, mostly 2–3 times as long as wide; blades at tip usually obtuse, rounded or emarginate, but sometimes, especially in the upper leaves, broadly short-acuminate or acute (when acute the very tip often twisted); base cuneate or rounded, the margins usually shortly cuneate at extreme base and decurrent on the broad stout dorso-ventrally flattened petiole which is 3–6 (–8) mm. long; midvein impressed above, prominent beneath; lateral veins 6–8 pairs, slightly raised on both surfaces, usually strongly ascending; marginal vein about equaling the laterals, continuous, but evidently formed of the strongly arching tips of the laterals, its distance from the margin as much as 8–10 mm. at the ends of the arches in large leaves, or as little as 1 mm. in small leaves; leaves usually browning and discolorous in drying, the upper surface smooth and markedly lustrous, usually eglandular, the lower dull, sparingly gland-dotted at least when young; inflorescence an axillary dichasium, usually 3- or 7-flowered but on some plants mostly 15-flowered or nearly all 1-flowered; peduncle 1.5–5.5 (usually 2.5–3.5) cm. long, strongly compressed near the summit and there 2–3.5 mm. wide; pedicels and intermediate branchlets somewhat compressed, more slender, 2–5 (–10) mm. long; bracts and bracteoles subulate, linear or narrowly lanceolate, 2–4 (–12) mm. long, deciduous at anthesis or before, leaving prominent auricle-like scars; calyx-lobes 4, broadly rounded, strongly concave, 3–4 mm. wide, 2–3 mm. long; disk flat, 3.5–5 mm. wide, the center glabrous; style glabrous, 10–11 mm. long; stamens 150–175, 7–10 mm. long; petals white or cream-colored, broadly elliptic, about 6 mm. long; fruit probably globose, black, about 1 cm. in diameter; seeds 1 or 2. —F.M. Neg. 36904.

Piura: Ayavaca, *Bonpland*, type.—Huánuco: Panao, *3624*.—?Junín: Pariahuanca, *Mathews 1225*.—Without definite locality, *Ruiz*(?) (in herb. Barbey-Boissier, lectotype of *E. porphyroclada*). Andes of Ecuador and Colombia, at elevations of 2,000–3,000 meters.

Apparently conspecific is *Eugenia coccolobifolia* (HBK.) Burret, Notizbl. Bot. Gart. Berl. 15: 521. 1941 [*Myrtus coccolobaefolia* HBK. Nov. Gen. & Sp. 6: 139 (folio ed. p. 110). 1823. *Myrcia coccolobaefolia* DC. Prodr. 3: 255. 1828. *Pseudocaryophyllus coccolobaefolius* Berg, Linnaea 27: 416. 1856]. The original specimens, from Ibagué, Colombia (F.M. Neg. 36882), represent a broad-leaved vigorous extreme. Similar plants are found throughout the range of *E. rhopaloides*. Berg cited no specimen of his *Pseudocaryophyllus coccolobaefolius*, and apparently he did not actually see any material of the

species; presumably he transferred it to *Pseudocaryophyllus* (a genus of the subtribe Pimentinae) because of statements in the original description by Kunth, in which the calyx was said to be "4–5 partitus" and the embryo "immaturus uncinatus." Kunth's type, the specimen collected by Bonpland, agrees precisely in other respects with *Eugenia rhopaloides*, and it seems likely that the description of the immature ovules as "uncinate" was based on mistaken observation. I am unable to explain the reference to a 5-parted calyx, unless there was some confusion of specimens by Kunth; as far as I could determine by examination in 1954, the Bonpland specimen at Paris bore 4-parted calyces only. As far as I am aware there has been no collection, subsequent to that made by Bonpland, of any material legitimately referable on characters of the fruit to *Pseudocaryophyllus coccolobaefolius*.

Eugenia porphyroclada was based on collections made by Ruiz in "Peru et Chile," which Berg saw "in hb. Berol. ex hb. Lamb." The specimens which he described have presumably been destroyed, but among the Barbey-Boissier collections at Geneva is a series of four sheets, three labeled as from Peru and one as from Chile, which from the labels are apparently also from the collections of Ruiz and Pavón. These specimens agree precisely with Berg's description of *E. porphyroclada*, which he distinguished from *E. rhopaloides* (although he did not contrast the two species directly) by its shorter petioles, the acute upper leaves and the more obtuse lower ones, the short 3-flowered peduncles with deciduous lanceolate foliaceous bracts 10–12 mm. long. In these specimens the characters in question seem to reflect individual variation rather than any interspecific differences. Univ. of Mich. Neg. 479.

In Ecuador and probably southern Colombia occurs the very similar *Eugenia alaternifolia* Benth. (Pl. Hartw. 175. 1845), which differs from *E. rhopaloides* in the shorter, more congested dichasia and the slightly smaller flowers (e.g. the styles 6 mm. long). In appearance *E. alaternifolia* suggests a transitional form between *E. rhopaloides* and *E. pycnantha* Benth. (Pl. Hartw. 174. 1845). In the latter species, a native of western Ecuador and southern Colombia, the inflorescences are corymbosely aggregated toward the ends of the branches, the individual dichasia are 3 to 4 times dichotomously forked with flat joint-like more or less appressed branches 1 cm. long or less, the 20–30 flowers form a cluster 1–2 cm. long, and the individual flowers are about the size of those of *E. alaternifolia*.

Eugenia triquetra Berg, Linnaea 27: 141. 1856. *E. triquetra* β *aequatorialis* Berg, Linnaea 31: 253. ?1862. *Eugenia Weberbaueri* Diels, Bot. Jahrb. 37: 598. 1906, in part?

A shrub, with small, mostly glabrous ternate leaves, the branchlets with numerous ascending to appressed sordid stiff hairs up to 0.5 mm. long, a few appressed hairs sometimes persisting on the leaves, the inflorescence glabrous (or in var. *aequatorialis* the hypanthium white-strigose); leaves cuneate-obovate to ovate or suborbicular, 4–9 mm. wide, 6–18 mm. long, as wide as long or up to twice as long as wide, the tip rounded to retuse, or bluntly pointed, the base acute to cuneate, the margins decurrent on the terete petiole 1–3 mm. long; midvein impressed in a narrow line above, prominent beneath; lateral veins 5–8 pairs, usually not apparent in mature leaves, evident beneath in young leaves; marginal vein about equaling the laterals and arched between them, up to 1 mm. from the margin; blades green and lustrous above, sometimes with impressed glands, the lower surface paler and somewhat dull, often drying brown, gland-dotted, acutely and narrowly cartilaginous-edged; flowers axillary, solitary, on slender pedicels 6–16 mm. long, these terete or somewhat compressed, up to about 0.5 mm. thick or a little more; bracteoles subulate, about 1 mm. long, deciduous at anthesis; buds 4–5 mm. long; calyx-lobes broadly rounded or triangular-ovate, ciliate, somewhat appressed-pubescent within, sometimes slightly unequal, 1–2 mm. wide, or up to 2.5 mm. long and 2.5 mm. wide; disk 2–2.5 mm. wide, glabrous; style 7–12 mm. long; stamens about 50, 7–10 mm. long, the anthers 0.4 mm. long; petals subrotund, ciliate-fringed, 4–8 mm. long; fruit not seen.—A little-known Colombian species, with an Ecuadorian variety known from a single collection on the southern slopes of Chimborazo. The Peruvian collection cited below is apparently conspecific, but additional material of this species is needed for study. F.M. Negs. 20013, 23595. A syntype collection of *Eugenia weberbaueri*, from mountains west of Huambos, Cajamarca, *Weberbauer 4176* (herb. USM), has most of the leaves ternate, and is indistinguishable from other material of *E. triquetra*. It is probable that *E. triquetra* and *E. myrsinoides* represent ternate-leaved and opposite-leaved forms, respectively, of the same species.

Cajamarca: Cutervo, *Jelski 341*.

DOUBTFUL AND EXCLUDED SPECIES

Eugenia andina Berg, Linnaea 27: 274. 1856. "*Myrtus emarginata* Ruiz hb. . . . (v. in hb. Berol.) . . . Habitat in *Peruviae Andium*

nemoribus (Ruiz)." In Berg's systematic arrangement of species this is placed near *E. rhopaloides* (HBK.) DC., which the description somewhat suggests.

Eugenia ovalis Berg, Linnaea 27: 156. 1856. "(v. in hb. Berol. gen.). Habitat in *Peruviae Andium* nemoribus (Ruiz)." This is said to have solitary axillary flowers; the description suggests a species similar to *Myrcianthes discolor* but this is by no means certain.

Myrcianthes sp. Weberbauer's no. 5898, from near the Río Apurímac, Cuzco, in bud only, represents a somewhat hirsutulous species with obovate to orbicular leaves 3 cm. long, and a finely strigose 3-flowered dichasium.

6. PLINIA L.

Calyx-lobes 4, somewhat united at base, the calyx-tube (hypanthium) splitting irregularly longitudinally in anthesis. Hypanthium prolonged beyond the summit of the ovary. Flowers pubescent, in small, nearly sessile, persistently involucrate clusters. Ovules 2. Cotyledons free, plano-convex.

A small genus of tropical America; it is of somewhat doubtful homogeneity, including as it does about a half dozen species of northern lowland South America, and about 25 superficially dissimilar West Indian species which were placed in the genus by Urban. The genotype, *P. pinnata* L., is founded entirely upon Plumier's *Plinia fructu croceo, odorato* (Plum. Nov. Pl. Amer. Gen. 9. *t. 11.* 1703), which from the illustration can hardly be identified with any existing species unless it may be something like *Eugenia uniflora* with 5-merous flowers. Urban, however (Repert. Sp. Nov. 15: 412–413. 1919), took the position that *P. pinnata* was identical with *Marlierea glomerata* Berg, a species of British Guiana and the Lesser Antilles. Amshoff (Flora Surin. 3, pt. 2: 97–99. 1951) has accepted Urban's views and described the genus with special reference to continental South American species.

One species described below, *Plinia clausa,* has well-developed pedicels and the flowers are borne in short but evident racemes which nearly or wholly lack the sterile basal bracts which are a conspicuous feature of the other Peruvian species. This species is referred to *Plinia* because of the completely closed (and presumably irregularly opening) calyx, and the biovulate condition of the locules.

Pedicels 4–5 mm. long; flowers 2–4 pairs in short racemes; buds completely closed, apiculate, 7–8 mm. long; plants appressed-hispidulous, with no long silky hairs..... *P. clausa*

Flowers sessile or subsessile, in sessile clusters subtended by sterile bracts; buds, if closed, 12 mm. long; plants variously hirsutulous or silky-pilose in the inflorescence.

Buds completely closed, whitened and felted with long appressed hairs, 12 mm. long; stamens about 500; leaves 4–6.5 cm. wide. *P. inflata*

Buds 6–7 mm. long or less, the calyx-lobes silky-pilose or hirsutulous, free at tips; stamens 125–150 (number not known in *P. pinnata*); leaves various.

Leaves hirsutulous beneath with hairs about 0.5 mm. long, the veins with some longer hairs up to 2 mm. long; hypanthium 2–2.5 mm. across; style 4.5–6 mm. long. . *P. pinnata*

Leaves with minute hairs 0.2 mm. long on the lower surface, the young branchlets and leaves also with hairs up to 4 mm. long; hypanthium 3.5–4.5 mm. wide; style 9–11 mm. long. *P. duplipilosa*

Plinia clausa McVaugh, Fieldiana Bot. 29: 224. 1956.

A tree or shrub, the inflorescence, branchlets and young petioles and leaves antrorsely appressed-hispidulous with stiff ochraceous hairs up to 0.3 mm. long, the mature leaves glabrous or nearly so, the hairs on the hypanthium very numerous at least at base, intermixed at least in the young bud with a somewhat persistent waxlike covering; leaves elliptic, 3–4 cm. wide, 7–10 cm. long, 2–2.3 times as long as wide, narrowly acuminate, acute at base, the margins passing abruptly into the terete petiole 1–1.3 mm. thick, 6–10 mm. long; midvein plane or slightly convex above, more prominent beneath; lateral veins about 10 pairs, very slender and with intermediate veins about the same size, more conspicuous beneath; marginal vein about equaling the laterals, scarcely arched between them, about 1 mm. from the margin and parallel to it; blades dull and featureless above, the lower surface minutely roughened, with tiny glistening cells; glandular dots not apparent in mature leaves; inflorescence a short axillary raceme, its axis up to 3 mm. long, with 2–4 approximate decussate pairs of flowers on nearly terete pedicels 0.7 mm. thick, 4–5 mm. long; bracts conspicuous, persistent, membranaceous, scarious, glabrous distally but ciliate, ovate, bluntly pointed, about 3 mm. long, enfolding the pedicels (when expanded 2.5–3 mm. wide); bracteoles similar, persistent, elliptic, acute with recurved tips, appressed to the hypanthium in bud, 2.5–4 mm. long; buds completely closed, 7–8 mm. long, apiculate 0.5–0.7 mm.; hypanthium narrowed to base,

about 2.5 mm. long and wide, sulcate and ridged in drying, abruptly expanded into the globose calyx 5–6 mm. in diameter; style glabrous, erect in bud, 4.5 mm. long, the dilated and subpeltate stigma 0.8 mm. wide; disk glabrous, the glabrous inner surface of the hypanthium prolonged 4 mm. above the summit of the ovary; stamens 200–250, incurved in bud, attached in a hairy zone which occupies most of the distal half of the bud; anthers 0.6–0.9 mm. long; petals none; ovary bilocular, the ovules 2 and collateral in each locule.

Loreto: Soledad (lower Río Itaya, near Iquitos), July, 1925, *G. Tessmann 5287* (NY, type).

Plinia duplipilosa McVaugh, Fieldiana Bot. 29: 224. 1956.

A tree, the branchlets, petioles, and veins of the lower leaf-surface with tiny erect hairs 0.2 mm. long, the young branchlets and leaves also pilose with slender straight white hairs up to 4 mm. long, the inflorescence densely silky-pilose; leaves elliptic-ovate, 4–5 cm. wide, 10–13 cm. long, about 2.5 times as long as wide, narrowly acuminate and sharp-pointed, the margins meeting at base nearly at right angles, and passing abruptly to the flat summit of the petiole 1.5 mm. thick, 5–6 mm. long; midvein flat or with a narrow elevated median ridge above, prominent beneath; lateral veins 6–10 pairs, narrowly impressed above, evident beneath; marginal vein about equaling the laterals and formed from their obliquely arched tips, 3–7 mm. from the margin; blades smooth and green above, dull and somewhat yellow green beneath; glands not apparent in mature leaves; inflorescences in leafless axils on old wood, the flowers in 4's, in sessile bracteate clusters, the sterile bracts 4-ranked, the lowest smallest, all broadly rounded, deciduous at anthesis, scarious; fertile bracts elliptic, blunt-tipped, up to 7 mm. long, glabrous within, ciliate-fringed with very slender flaccid hairs 0.5 mm. long, pilose on the back with longer straight hairs; bracteoles like the fertile bracts, elliptic or lanceolate, 2.5–3 mm. wide, 5–6 mm. long; buds obovate, 6.5 mm. long, delicate in texture, completely concealed by straight hairs 2.5 mm. long, the hypanthium broadly obconic, 1.5 mm. long, the calyx glabrous inside, closed except for free deltoid tips 2 mm. wide, 1.5 mm. long; calyx at maturity with flat, nearly square limb 5–6 mm. on a side, the limb formed of the staminal ring 1 mm. wide and the free calyx-tips at the corners; receptacular cup hemispheric, 3.5–4.5 mm. wide, 2.5–3 mm. deep, glabrous; style 9–11 mm. long; stamens 125–150, about as long as the style, strongly incurved in bud, the anthers linear, 1 mm. long; petals 4, obovate, 3 mm. wide, 2.5–3.3 mm. long, finely appressed-pubescent inside, tomentose out-

side; ovary bilocular, the ovules 2 in each locule, collateral, pendulous.—Klug's collection differs in having the veins more prominent beneath and up to 15 pairs on each side, and in the longer and narrower leaves. The flowers and inflorescence of his specimen, however, are very like those of the type. Apparently also conspecific is Cuatrecasas' no. 7092, from the lowlands of eastern Colombia; the flowers in this collection have more elongate bracts and free calyx-tips but are otherwise much like Peruvian specimens.

Loreto: Yurimaguas, alt. about 135 meters, dense forest, *Killip & Smith 28007* (US, type); Mishuyacu, near Iquitos, alt. 100 meters, forest, *Klug 1155*.

Plinia inflata McVaugh, Fieldiana Bot. 29: 225. 1956.

Tree to 9 meters high, the branchlets, petioles and younger leaves hispidulous with numerous pale short erect hairs, and also pilose with very slender straight yellowish-white hairs 1–1.5 mm. long, the leaves glabrate above, and below except on veins and margins; inflorescence, including the whole bud, whitened and felted with densely appressed long hairs; leaves elliptic-oblong, 4–6.5 cm. wide, 9–15 cm. long, about 2.5 times as long as wide, abruptly and narrowly acuminate, the base acute, the margins passing abruptly into the summit of the terete petiole 1.5–2 mm. thick, 7–8 mm. long; midvein flat above or sulcate near the base, hirsute in young leaves, prominent beneath; lateral veins very slender, 15 or more pairs in addition to some intermediates, very narrowly impressed above, elevated beneath but not very conspicuous; marginal vein about equaling the laterals and slightly arched between them, 1.5 mm. or usually much less from the margin, sometimes obscured by the inrolled margin; blades lustrous, smooth and minutely impressed-puncticulate above, paler, dull, often appressed-pilose and with small dark dots beneath; flowers borne in sessile bracteate clusters (4–12 flowers together) on old wood, the axis up to 2 mm. thick and about as long, bearing several very short stout racemes; sterile bracts 4-ranked, 3–4 pairs, glabrous, ovate, scarious, 1.5–2 mm. long; innermost bracts brown, glabrous, scarious, ovate, 3 mm. wide, 4 mm. long; bracteoles hairy outside, connate and forming a loose collar about the base of the hypanthium, elliptic-obovate, obtuse, 4–5 mm. wide and 6–8 mm. long; buds completely closed, apiculate, turbinate, 12 mm. long and almost as wide, the top hemispheric, the calyx splitting longitudinally from the apex into 4 nearly equal, irregularly ovate acute lobes 6–8 mm. wide, 10–12 mm. long, the splits extending somewhat deeper than the inner

margin of the broad hairy staminal ring, which is 6–7 mm. wide and has its apical margin 1.5–2 mm. from the apex of the bud; calyx-lobes after anthesis spreading cruciform from the cuplike center of the disk, which is 2–3 mm. wide, 2 mm. deep, the entire calyx below the staminal ring glabrous and prominently gland-dotted; style not seen, glabrous at base, probably 1.5 cm. long or more; stamens about 500, probably 1.5 cm. long or more at maturity, all strongly incurved in the bud, the anthers linear, 1.2–1.8 mm. long; petals crumpled, pilose, 1 mm. wide, 3 mm. long; ovary bilocular, the ovules 2 in each locule, collateral.—Known only from two collections (*Krukoff 6365*, type; *Krukoff 6525*) from the basin of the Rio Madeira, near Tres Casas, Amazonas, Brazil.

Peru (probably). Amazonian Brazil.

Plinia pinnata L. Sp. Pl. 516. 1753. *Myrciaria involucrata* Berg, in Mart. Fl. Bras. 14, pt. 1: 375. 1857.

A shrub or tree to 5 meters high, the leaves more or less densely hirsutulous beneath with yellowish soft erect hairs mostly about 0.5 mm. long, the bases of these hairs slightly enlarged; longer, and often appressed, nearly white hairs up to 2 mm. long usually intermixed, especially on the veins; petioles, branchlets, and midvein on the upper leaf-surface villous-tomentose, the hairs longer, often 1 mm. or more, often appressed or matted; hairs of the bracts long and appressed, or almost none; leaves sometimes glabrate in age; leaves elliptic, 1.5–4 cm. wide, 5–10 cm. long, mostly 2.5–3.5 times as long as wide, gradually or somewhat abruptly rounded to the flat summit of the petiole 1–1.5 mm. thick, 3–5 mm. long; midvein flat or ridged above, the whole sometimes impressed, raised about its own thickness below; lateral veins 10–15 pairs, obscure above, weakly elevated beneath; marginal vein about equaling the laterals and slightly arched between them, 1–2 mm. from the margin; blades dark and lustrous above, yellowish-green beneath; no glands apparent at maturity; inflorescence[1] axillary, sessile, the flowers subsessile, glomerate, inclosed by 4–5 pairs of ovate, ciliate, 4-ranked bracts, the outer shorter, the inner 2–3 mm. long; calyx in the bud very shortly 4-lobed, valvate, splitting irregularly; receptacle deeply sunken, 2–2.5 mm. across, glabrous within; style 4.5–6 mm. long; petals suborbicular, about 2 mm. long; fruit oblate, 1.5–2.5 cm. across, hairy. —A species well known in the Guianas and ranging to the Lesser

[1] Description of the inflorescence mostly from Amshoff's treatment (Flora of Suriname, 3, pt. 2: 98. 1951).

Antilles and Amazonian Brazil. The type of *Myrciaria involucrata, Poeppig 2882,* came from Ega, Brazil. F.M. Neg. 36964.

Peru (probably). Amazonian Brazil to the Antilles.

7. MYRCIARIA Berg

Reference: Berg, Linnaea 27: 320–338. 1856; and in Mart. Fl. Bras. 14, pt. 1: 358–376. 1857.

Calyx-lobes 4, distinct and imbricated. Hypanthium markedly prolonged above the summit of the ovary, circumscissile at base, and cleanly deciduous, with the perianth and androecium, about the time of anthesis. Flowers subsessile, in racemosely arranged clusters of (usually) 4 each. Ovules 2. Embryo (according to Amshoff) undivided.

A well-marked genus, probably of about 40 species, in tropical America from Panama and the West Indies southward in the lowlands east of the Andes.

Leaves small, 4 cm. long or less; branchlets densely short-hispidulous; style 4–5 mm. long.....*M. tenella*

Leaves 6–10 cm. long; branchlets glabrous or essentially so; style about 10 mm. long.....*M. paraensis*

Myrciaria paraensis Berg, in Mart. Fl. Bras. 14, pt. 1: 364. 1857. *M. spruceana* Berg, l.c. 365.

A shrub or small tree up to 8 (–13) meters high, glabrous or nearly so at maturity, minutely and sometimes very sparingly hispidulous on the branchlets and the ventral surface of the petioles, with pale sharp hairs up to 0.2 mm. long; calyx-lobes bright rufous-pubescent on the inner surface and the margins; bracts and bracteoles similarly ciliate; leaves broadly or narrowly ovate, or elliptic, often somewhat inequilateral, (1.5–) 2.5–4.5 cm. wide, (4.5–) 6–10 (–12) cm. long, 2–3 (–4 on shoots) times as long as wide, the tip acute or gradually acuminate, the base rounded or subcuneate but the margins at very base abruptly incurved into the petiole, forming a pair of slightly raised and usually subopposite auriculate appendages; petiole up to about 1 mm. thick, 3–6 (–9) mm. long; leaves dull and browning in drying, the two surfaces similar but the lower paler; midvein broad and flat or convex on the upper surface, somewhat elevated on the lower; lateral veins about 20 pairs, very slender, obscure in mature leaves, without evident differentiation in size, the actual number

often difficult to determine because adjacent veins join, separate or even cross; marginal vein about equaling the laterals, 1–1.8 mm. from the margin in the larger leaves; glands apparent on both surfaces at least in young leaves, more elevated and conspicuous on the upper surface; inflorescence axillary, or supra-axillary, up to 1 mm. above the base of the petiole; axis 1–1.5 mm. long, bearing usually 4 nearly sessile flowers in 2 decussate pairs; bracts rounded, ciliate, about 1.5 mm. long and broad; pedicels very stout for their length, up to 1.5 mm. long and nearly 1 mm. thick; bracteoles persistent, broadly ovate and rounded at apex, united by their basal margins into a cuplike involucre 0.5 mm. high at the center line, 2–3.5 mm. long and 1.5–2 mm. wide; hypanthium sessile, broadly obconic, 2.5–3 mm. long, circumscissile and deciduous from the summit of the ovary after anthesis, glabrous within and without; bracteoles, hypanthium, calyx-lobes and corolla with prominent dark raised glands; calyx-lobes broadly rounded, about 2 mm. wide and almost as long; style 10–11 mm. long; petals white, ovate, ciliate, 3–4 mm. long; stamens about 125, up to 7–10 mm. long; anthers 0.5–0.7 mm. long; fruit globose(?), 10–12 mm. in diameter, soft, red-brown (Schunke) or black-purple (Spruce), about 2-seeded, naked at apex, the circular scar there about 2 mm. across.—This plant closely resembles certain species from the Guianas, notably *Myrciaria divaricata* (Benth.) Berg and *M. vismeaefolia* (Benth.) Berg, and it is possible that all three of these are conspecific. A species from the lower Amazon Valley, *M. amazonica* Berg, is very closely related also. F.M. Negs. 20027, 20029.

San Martín: Tarapoto, *Spruce 4431* (herb. Paris). In sylvis montis Guayrapurina, *Spruce 4431* (herb. Benth.); montibus secus flumen Mayo, prope Tarapoto, *Spruce 4431* (herb. Hook.).—Loreto: Mishuyacu, *Killip & Smith 29962*. Gamitanacocha, *Schunke 334*. Iquitos, *Williams 3672*. Río Mazán near Iquitos, *Williams 8149*. Amazonian Brazil and Venezuela. "Camocamo" (Schunke, Williams), "Camu-camu" (Williams).

Myrciaria tenella (DC.) Berg, Linnaea 27: 328. 1856. *Eugenia tenella* DC. Prodr. 3: 272. 1828.

A tree to 5 meters high, minutely hispidulous on the branchlets, inflorescence, petioles, leaf-margins and midveins, with erect sharp pale hairs 0.1–0.2 mm. long; branchlets compressed; leaves elliptic, 0.8–1.9 cm. wide, 2–4 cm. long, about 2–2.5 times as long as wide, the tip obtusely or acutely pointed or obscurely broad-acuminate, the base cuneate, the margins decurrent on the stout petiole 2 mm.

long; leaves green and the two surfaces similar, the midvein nearly plane, or somewhat elevated beneath; lateral veins very slender, 15–20 principal closely parallel pairs with fine intermediates; marginal vein about equaling the laterals, little arched between them, 1 mm. from the margin in the larger leaves; glands apparent on both surfaces in young leaves, obscure in older leaves; inflorescence axillary or appearing somewhat supra-axillary, or the subtending leaf reduced to a linear bract 1 mm. wide, 5 mm. long; axis of inflorescence usually about 1 mm. long, bearing 4 nearly sessile flowers in two decussate pairs; bracts rounded, ciliate, about 0.5 mm. long and wide; pedicels very stout for their length, up to 1 mm. long and 0.4 mm. thick; bracteoles persistent and forming a cuplike involucre at the summit of the pedicel, ovate, broad-based, rounded at apex, 1 mm. long and about as wide; hypanthium sessile in the bracteoles, nearly cylindrical or distally widened, lustrous and glabrous without, about 1.5 mm. long, the inner cavity about 1 mm. deep, hairy at bottom, the whole circumscissile, dehiscent from the summit of the ovary after anthesis; calyx-lobes rounded, gland-dotted, hairy especially near tips, about 1 mm. long and more than 1 mm. wide; style 4–5 mm. long, hairy near base; petals white, obovate, ciliate, 3 mm. long, gland-dotted; stamens about 60, up to 4 mm. long, the anthers 0.3 mm. long; fruit probably globose and 5–6 mm. in diameter, but not seen fully mature.—The above description is drawn from the few Peruvian specimens available for study, but these differ in no way except leaf-size from plants of eastern Brazil, including the original collections made by Martius. The leaves in our specimens are about twice as large as those of most Brazilian specimens seen. F.M. Neg. 20030.

San Martín: Juanjuí, *Klug 4172*.—Locality uncertain, *Ruiz & Pavón* (herb. Brit. Mus.).

EXCLUDED SPECIES

Myrciaria? Guapurium (DC.) Berg, Linnaea 27: 470. 1856. *Guapurium peruvianum* Poir. Dict. Sci. Nat. 20: 11. 1821. *Eugenia Guapurium* DC. Prodr. 3: 273. 1828.

This species is probably not a member of the Peruvian flora. The type specimen is sterile, so it is impossible to determine the genus to which it belongs; it is probably correctly assigned to *Myrciaria* but may equally well represent a species of *Eugenia*. In either case a new nomenclatural combination is required. The original material was sent by Joseph de Jussieu from "Peru" to

Paris, where it is still preserved, together with a water-color sketch made by de Jussieu on December 6, 1749, and titled by him "Guapuru de Sta. Crux." In the late summer and autumn of 1749, as shown by his letters and other manuscripts preserved in the library of the Muséum National d'Histoire Naturelle (Mss. 111, 179, 1625–1627), de Jussieu was in Bolivia, where he spent some time about the mines of Potosí. He made a large collection of plants in the vicinity of Santa Cruz, Bolivia, and it seems reasonable to suppose that his "Guapuru de Sta. Crux" came from this locality in south-central Bolivia, rather than from Peru. The specimens preserved in the Jussieu Herbarium, and a fragment of what is evidently the same specimen, in the DeCandolle Herbarium (F.M. Neg. 7942), are sterile, but the small characteristically pointed leaves and the finely yellowish-hirsute branchlets and leaves are quite unlike any other species known at present from Peru. De Jussieu's drawing shows the flowers sessile and 4-parted, as in *Myrciaria*, and fruit oblate, about 2.5 cm. high and 3 cm. broad, purple or violet in color.

Subtribe **PIMENTINAE** Berg

Trees or shrubs, or in some species of *Myrteola* prostrate and subherbaceous; flowers solitary, or in dichotomously branched inflorescences, or in one genus (*Acca*) racemose. Flowers 4- or 5-merous, the calyx with distinct lobes or partially or completely closed in bud, then circumscissile or opening by irregular longitudinal fractures. Embryo spiral, subspiral or uncinate-curved, the radicle elongate and the cotyledons very short and inconspicuous. Ovary 2- to many-locular, the ovules usually numerous in each locule, longitudinally biseriate on the axis, or the placentae produced into the locule from the center and so bilamellate. Stigma often peltate.

8. **ACCA** Berg

Shrubs or small trees, villous or tomentose, with coriaceous leaves. Filaments flattened, much elongate, red, erect in bud. Calyx-lobes 4. Flowers racemose or in 3-flowered dichasia (or by reduction solitary). Ovary bilocular, the placentae bilamellate. Embryo uncinate.

Perhaps includes only the following Peruvian species, although Burret (Repert. Sp. Nov. 50: 59. 1941) has proposed to merge with *Acca* the monotypic south-Brazilian genus *Feijoa* Berg.

Leaves 4–7.5 cm. long; petiole 5–9 mm. long; flowers solitary and axillary, or in 3-flowered dichasia. . . . . *A. lanuginosa*

Leaves 1.7–3.5 cm. long; petiole 2–2.5 mm. long; flowers solitary from the basal nodes of leafy branches, or in short racemes. *A. macrostema*

Acca lanuginosa (R. & P. ex G. Don) McVaugh, Taxon 5: 136. 1956. *Psidium lanuginosum* R. & P. Fl. Peruv. & Chil. 4: *t. 421b*, ined. [?1802]; G. Don, Gen. Hist. 2: 832. 1832. *A. peruviana* Berg, Linnaea 27: 138. 1856. *A. velutina* Burret, Rep. Sp. Nov. 50: 58. 1941.

Small tree, densely ochraceous-velutinous or -tomentose on the branchlets, inflorescence and the lower surface of the leaves; leaves coriaceous, ovate or elliptic, 2.5–4 cm. wide, 4–7.5 cm. long, 1.5–2.3 times as long as wide, often about equally narrowed to both ends, the tip usually blunt or rounded, sometimes acute or emarginate; base rounded or subcuneate, the margins irregularly and closely sinuate near the tips and appearing crenate, decurrent on the stout, rather long petiole 1–1.5 mm. thick, 5–9 mm. long; blades rugose-reticulate, the large and small veins impressed above, at least the larger prominent beneath; lateral veins 8–12 pairs, the number variable and obscure because of forking and intermediate veins; marginal vein about equaling the laterals, and consisting of a series of arches connecting them, 1–4 mm. from the margin; upper surface glabrous and lustrous, or somewhat pubescent, sparingly glandular; lower surface hidden by the dense tomentum; peduncles axillary, 1- or 3-flowered, 1.5–2.5 cm. long and up to 1.5 mm. thick; bracts and bracteoles narrowly elliptic, persistent, foliaceous, obtuse, the larger subpetiolate; bracts in 3-flowered dichasia 4–6 mm. wide, 12–18 mm. long; bracteoles 2–3 mm. wide, 6–9 mm. long, the larger sometimes with abortive axillary buds; immature buds 1.5–1.8 cm. long, the hypanthium narrowly obconic, more than half this length, the calyx-lobes in 2 unequal pairs, appressed in bud, oblong or ovate, blunt-pointed, tomentose both sides, the larger pair 4–5 mm. wide, 6–9 mm. long; disk hairy, 3–4 mm. wide; style glabrous, 16–22 mm. long; stamens 25–50, the filaments flattened, 15–22 mm. long, deep red (Macbride), the anthers about 1 mm. long; petals waxy whitish-pink (Macbride), obovate, glabrous, ciliate, 5–7 mm. wide, 10–12 mm. long; fruit ellipsoid, 8–10 mm. thick, about 1.5 cm. long, crowned with the prominent erect calyx-lobes; seeds about 15–20, about 3 mm. long, psidioid, the embryo C-shaped.—*Acca velutina*

was based on a collection in which the hairs are longer and more nearly erect than in other specimens of this plant, and the upper surface of the leaf is less markedly rugose. These differences are no greater than those which are known in regional races in different parts of the Andes, in numerous families and genera of flowering plants, and the many similarities between typical *Acca lanuginosa* and *A. velutina* indicate that they are conspecific. F.M. Neg. 36411.

Huánuco: Muña, about 7000 feet elevation, dry steep eastern slope, in groves, *3965;* Muna [Muña], *Ruiz* (according to Berg), type in herb. Berlin. Abajo de Muña, 1800–1900 meters, *Weberbauer 6712.*—Apurímac: Río Pinko, 2700 meters, *Weberbauer 5866,* type of *A. velutina.*—Locality uncertain: *Ruiz & Pavón 23/82; Ruiz,* ex herb. Berol., isotype of *P. lanuginosum;* "N[ueva] E[spaña]," collector not stated (Herb. Barbey-Boissier).

Acca macrostema (R. & P. ex G. Don) McVaugh, Taxon 5: 136. 1956. *Psidium macrostemum* R. & P. Fl. Peruv. & Chil. 4: *t. 420a,* ined. [?1802]; G. Don, Gen. Hist. 2: 833. 1832. *Eugenia? Acka* DC. Prodr. 3: 277. 1828. *Myrtus Acka* Juss. herb. ex DC. l.c., in synon. *A. domingensis* Berg, Linnaea 27: 138. 1856, *α latifolia* Berg, l.c., and *β angustifolia* Berg, l.c. 139.

Low shrub 2–5 feet (Macbride), heavily villose or tomentose on the branchlets, inflorescence and lower surface of the leaves, with soft white or finally nigrescent hairs; leaves often crowded, the internodes 0.5–1 cm. long; blades coriaceous, dark green and lustrous above, 0.7–1.5 (–2.5) cm. wide, 1.7–3.5 cm. long, (1.2–) 2–3 times as long as wide, often appearing narrower because of the strongly involute margins, bluntly or acutely pointed, or very shortly acuminate, the base rounded, the margins decurrent on the compressed channeled petiole 1 mm. thick, 2–2.5 mm. long; midvein impressed above, prominent beneath; lateral veins 6–10 pairs, flat or very finely impressed above, raised beneath but concealed by the tomentum; marginal vein arched between the laterals, 1–2 mm. from the margin, inconspicuous; leaves drying dark green above, often dark bluish-green and lustrous, glabrous or pubescent when young, minutely gland-dotted; flowers solitary from the basal nodes of leafy branches, or usually clustered near the tips of the branches, in congested few-flowered axillary racemes with abortive terminal buds; axis of raceme often 1–1.7 mm. thick, 1–3 mm. long, with 1–2 decussate pairs of flowers; lowest pair often the only one developed in crowded inflorescences; bracts, if not leafy, elliptic, blunt-pointed, glabrous on the inner sur-

face, 2 mm. wide, 4 mm. long; pedicels in fruit up to 1.5 mm. thick, 2–4 mm. long, occasionally 3-flowered and then compressed, and up to 5 mm. long; bracteoles broadly ovate, acute, glabrous, somewhat keeled, strongly ciliate-fringed, 2.5–4 mm. long and wide, distinct, but the rounded basal margins of opposite bracteoles overlapping; hypanthium cylindric, 2 mm. thick, 2.5–3.5 mm. long, glabrous to tomentose, the calyx-lobes broadly rounded, 3–3.5 mm. wide, 2.5–3 mm. long (in fruit up to 6 mm. long and 4.5 mm. wide), glabrous without, ciliate-fringed, tomentose within; disk 3–4 mm. wide, hairy; style 18–23 mm. long, the flat peltate stigma about 1 mm. wide; stamens 25–30, the color of port wine (Macbride), about 15–18 mm. long, the anthers 1.3 mm. long; petals suborbicular, 6–7 mm. long, gland-dotted, cucullate, ciliate; fruit dark red, ellipsoid, about 6–10 mm. thick, 8–12 mm. long, pubescent, gland-dotted; seeds 6–8, psidioid, 3–5 mm. long, the embryo C-shaped.—As pointed out by Bentham many years ago (in Benth. & Hook. f. Gen. Pl. 1: 713. 1865), Berg was in error in assuming that the original material of this species came from Santo Domingo, and the specific name *domingensis* is of course meaningless when applied to this species. F.M. Neg. 7929.

Huánuco: Mito, *3417*. Chinchapalca, 5 miles above Mito, about 9,500 feet, wet sunny rock cliffs, *Macbride & Featherstone 1600*.—Junín: Huasa-huasi, *Ruiz*, type of *P. macrostemum* (fragm. in F, ex herb. Madrid).—Locality uncertain: Cuerta (ex Berg) or Cuesta, (ex Benth.), *Ruiz*. Without locality, *Dombey*, type. Collector unknown (fruiting specimen, Herb. Barbey-Boissier).

9. PSIDIUM L.

Reference: Berg, Linnaea 27: 352–378. 1856; and in Mart. Fl. Bras. 14, pt. 1: 381–411. 1857.

Calyx various, usually splitting irregularly down to the ovary in anthesis, its tube (hypanthium) prolonged above the summit of the ovary. Calyx-limb of 4–5 distinct teeth or lobes, or completely closed in the bud, or with an apical pore. Ovary 2- to 7-locular, the sporophores parietal, directed toward the center and there reflexed and somewhat produced into the locules, connate in pairs and simulating axile bilamellate placentae. Petals often showy. Seed hippocrepiform or reniform, with bony testa and uncinate or curved embryo. Inflorescence (in Peruvian species) a 3-flowered (rarely 4- to 7-flowered) dichasium, or the flowers solitary.

An American genus which according to Berg includes about 100 species. The type species, *P. guajava* L., the guava (Spanish, *guayaba*), has been extensively cultivated for its fruit, for ornament and for shade; it spreads rapidly from seed and is now widely naturalized in the tropics.

The genus *Calycolpus* Berg, a group of 5–10 species closely allied to *Psidium* and resembling glabrous and lustrous-leaved members of that genus, ranges rather widely in northern and northeastern South America but apparently does not occur in Peru or even in immediately adjacent Brazil. The known species are relatively large-flowered and conspicuous, so it is probable that if any of them actually occurred in Peru, at least a few collections in herbaria would indicate this. One species, *C. calophyllus* (HBK.) Berg, is known as near to the Peruvian border as the Río Vaupés, and ranges thence northward into Venezuela; the genotype, *C. goetheanus* (DC.) Berg, is known from near the mouth of the Rio Negro but apparently not from farther west. *Calycolpus* is distinguished technically from *Psidium* by the presence of well-defined calyx-lobes which are spreading or even reflexed in the bud as well as in flower and which do not split below the base at anthesis. Actually the differences are slight between such species as *P. densicomum*, which has an open undulately lobed calyx, and *C. calophyllus*, in which the calyx-lobes are very short and broad, but distinct; no very convincing generic separation between these species can be effected on the basis of spreading or non-spreading calyx-lobes in the bud. After anthesis, and the accompanying rupture of the calyx in *P. densicomum*, a mechanical generic segregation may be made. The genus *Calycolpus* was reviewed by Riley (Kew Bull. 1926: 145–154. 1926).

Calyx-lobes 7–9 mm. long and distinct, or the lobes prolonged into narrow appendages 6–14 mm. long.

Calyx-lobes 4, ovate, 7–9 mm. long, tomentose without, appressed to the bud and covering it, apparently valvate.....*P.* sp.

Calyx-lobes 5, separating irregularly as segments 4.5–5 mm. long and wide, each tipped by an erect or spreading narrow foliaceous, nearly glabrous appendage 1.5–3 mm. wide, 6–14 mm. long.....*P. caudatum*

Calyx-lobes 3 mm. long or less, short, broad and rounded, or the buds completely closed before anthesis and dehiscing irregularly.

Leaves crenate, obtuse and cuspidate, narrow (1–2 cm. wide, 2–7 cm. long); plants finely pubescent; flowers solitary; buds glabrous, about 12 mm. long.....*P. maribense*

Leaves entire, or sometimes irregularly undulate, rarely less than 2.5 cm. wide and if so acute or acuminate; pubescence and flowers various.

Plants completely glabrous, even to the young vegetative buds; branchlets compressed, not angled; leaves 3–5 cm. wide, 7–14 cm. long, narrowed from below or near the middle to the acute and mucronate tip; calyx open, slightly flaring in bud, the broadly rounded lobes 2 mm. high.

P. densicomum

Plants with evident and usually abundant pubescence (sometimes on young growing parts only); branchlets often angled; leaves and calyx various.

Lateral veins 12–20 pairs, usually impressed above, prominent beneath and well differentiated from the smaller intermediate veins; young growth heavily pubescent; branchlets 4-angled or sometimes terete; buds closed, 10–16 mm. long, pointed, not cuspidate; peduncles 1- (very rarely 3-) flowered.

Leaves lanceolate or narrowly ovate, 1.5–3 cm. wide, 3–4 times as long as wide, gradually narrowed to the acute or acuminate tip; fruit with 8–15 irregular longitudinal ridges. . . . . *P. rutidocarpum*

Leaves elliptic or oblong, 3–6 cm. wide, 2–3 times as long as wide, more abruptly narrowed to the obtusely pointed or rounded tip; fruit globose or pyriform, smooth. . . . . *P. guajava*

Lateral veins 6–15 pairs (mostly 10 pairs or fewer), if more numerous then slender and scarcely differentiated from the intermediate veins, or the plants very sparsely pubescent only; branchlets and flowers various.

Lower leaf-surface hirsutulous, the numerous hairs erect or nearly so, 0.5–1 mm. long.

Pubescence of branchlets reddish; buds 10–12 mm. long, almost completely closed; peduncle 1.5–3 cm. long, 3-flowered. . . . . *P. guineense*

Pubescence tawny yellow; buds 3.5–6 mm. long, with 5 broad low calyx-lobes 1–1.5 mm. long; peduncle 1–1.5 cm. long or less, 3- to 7-flowered. . . . . *P. fulvum*

Lower leaf-surface glabrous or sparingly pubescent or strigose.

Leaves small for the genus, mostly 5.5 cm. long or less, often acute at both ends; buds 5–7 mm. long, open, the 5 broad low calyx-lobes much shorter than the corolla; branchlets terete or sometimes longitudinally channeled.

Dichasia 3-flowered, with very slender divaricate branches; calyx-lobes 1 mm. long or less; marginal vein of leaf strongly arcuate, 1.5–4 mm. from the margin at the points where the arches join the lateral veins; glands not apparent even in young leaves..... *P. pedicellatum*

Flowers solitary; calyx-lobes more than 2.5 mm. long; marginal vein about 1 mm. from the margin, not strongly arcuate; leaves gland-dotted on both sides at least when young..... *P. arayan*

Leaves larger, 5–10 cm. long or even longer; buds 10–16 mm. long, closed at apex; branchlets various.

Branchlets quadrangular, wing-angled; buds shortly apiculate; lateral veins 10 pairs or fewer; leaves usually with very numerous dark raised glands beneath; Amazonian lowlands, widely distributed. *P. acutangulum*

Branchlets compressed, sometimes with low rounded ridges, not wing-angled; buds with linear or subulate apiculum 2–5 mm. long; lateral veins 10–15 pairs; leaves with numerous small open glandular depressions of varying sizes, on both surfaces; Pacific slopes, Túmbez..... *P. rostratum*

Psidium acutangulum DC. Prodr. 3: 233. 1828. *P. grandiflorum* R. & P. Fl. Peruv. & Chil. 4: *t. 421a*, ined. [?1802]; G. Don, Gen. Hist. 2: 831. 1832.

A small tree, glabrous except for the reddish-strigose vegetative buds, or usually also the young branchlets and leaves and sometimes the peduncles sparingly and finely appressed-pubescent; branchlets quadrangular, wing-angled below the leaf-bases, or the wings up to 1 mm. wide and with stipule-like tips extending beyond the petiole-base on each side; leaves elliptic, (1.7–) 2.5–4 (–6) cm. wide, (3–) 6–10 (–14) cm. long, 2–2.5 times as long as wide, about equally narrowed to the gradually acuminate tip and the rounded or subcuneate

base, the margins decurrent on the short petiole, this 2–4 (–6) mm. long; midvein and in mature leaves usually the lateral veins impressed above, more prominent beneath; lateral veins 10 pairs or fewer, not forming a continuous marginal vein but diminishing distally, each reaching a point 1.5–3 mm. from the margin, then recurving and joining the next succeeding vein; leaves green in drying, the upper surface smooth and sparingly gland-dotted, the lower surface dull and often very thickly gland-dotted; inflorescence axillary, 1-flowered (rarely 3-flowered), the peduncle mostly 2–4 cm. long, 1 mm. thick (in fruit 1.5 mm.); bracteoles subulate, 3 mm. long; buds at maturity 10–12 mm. long, closed at the tip, the narrowly obovoid hypanthium 3–4 mm. long, little or not at all constricted at summit, thence expanded abruptly into the nearly globose, apiculate calyx; calyx splitting irregularly into 4–5 lobes; style 11–14 mm. long, the peltate biconvex stigma about 0.5 mm. across; petals white, broadly obovate, 15–18 mm. long; stamens very numerous, more than 300, up to 10 mm. long, the anthers 1–1.7 mm. long; fruit globose or somewhat pyriform, smooth or glandular-verrucose, 1.5–2.5 cm. in diameter, the seeds obtusely triangular, about 7 mm. on a side; embryo C-shaped.—F.M. Neg. 19748.

San Martín: Tarapoto, *Williams 6029, 6553.*—Loreto: On the Amazon River, *Williams 1989.* Pebas, *Williams 1849, 1995.* Caballo-Cocha, *Williams 2276.* Amazonian Brazil to the Guianas. "Ampi yacu," "Puca yacu," "Guayava del agua" (Williams).

Psidium arayan (HBK.) Burret, Notizbl. Bot. Gart. Berl. 15: 484. 1941. *Myrtus arayan* HBK. Nov. Gen. & Sp. 6: 133 (folio ed. p. 106). 1823.

A shrub about 2 meters high, with terete branchlets, finely hirtellous-pubescent on the branchlets, peduncles, bases and veins of leaves, with yellowish hairs up to 0.5 mm. long; leaves elliptic, thin, pointed at both ends, 1–1.6 (–2) cm. wide, 3.5–4.5 cm. long, 2.5–3 times as long as wide, the tip acute, the base narrowed and slightly rounded to the flat summit of the channeled petiole 4 mm. long; midvein flat above or impressed near the base, prominent beneath; lateral veins very slender and obscure, about 15 pairs; marginal vein about equaling the laterals, about 1 mm. from the margin; leaves lustrous above, gland-dotted on both sides at least when young; peduncles solitary, axillary, pubescent, 1-flowered, 2–3 cm. long and about 1 mm. thick; bracts (according to Kunth) linear, glabrous, spreading, longer than the calyx; calyx 5-parted, the lobes broadly rounded or somewhat pointed, ciliate-margined, about 2.8 mm. long, 3.3 mm. wide at base;

buds before anthesis 6–7 mm. long, nearly globose above the strigose, broadly obconic hypanthium, the globe of the petals much exceeding the calyx; petals (according to Kunth) white, orbicular, glabrous, about as long as the glabrous style and the very numerous stamens with subrotund-ovate anthers; ovary trilocular with many ovules (according to Kunth); fruit (according to Bonpland), globose, red, tasty, bilocular, crowned with the persistent calyx, the locules 1-seeded.—A species which seems to be related to *Psidium salutare* (HBK.) Berg, of northern South America. Apparently *P. arayan* has not been collected except by Bonpland. The type locality, "prope Gonzanamam Peruvianorum, ad ripam fluminis Catamayo, alt. 1080 hex.," is actually in Ecuador, about 30 km. southwest of Loja. The vernacular name "Arrayán," from which the specific epithet was derived, is applied loosely throughout Spanish America to various small-leaved Myrtaceae and sometimes to plants of other families. F.M. Neg. 36874.

Peru (probably). Ecuador.

Psidium caudatum McVaugh, Fieldiana Bot. 29: 226. 1956. *Psidiopsis moritziana* Berg, Linnaea 27: 351. 1856. *Calycolpus moritzianus* (Berg) Burret, in Fedde Repert. Sp. Nov. 50: 57. 1941. Not *Psidium moritzianum* Berg, 1856.

Tree to 20 meters high, the branchlets compressed, not angled, like the inflorescence and young leaves appressed-pubescent with pale yellowish-white, partly sessile, fusiform and dibrachiate hairs up to 0.5 mm. long, or the hairs on the vegetative buds to 1 mm. long, a few fusiform hairs persisting on the leaves especially below; leaves elliptic to lance-ovate, 1.5–3.5 cm. wide, 5–9 cm. long, 2–3.5 times as long as wide, with slender, attenuate and often oblique acumen 1–1.5 cm. long, the base rounded or acute, the margins cuneately decurrent on the rather slender petiole up to 1 mm. thick, 4–6 mm. long; midvein impressed above, prominent beneath; lateral veins impressed as faint lines above, slightly raised beneath, very slender and closely parallel, 15–30 pairs, but the exact number often uncertain because of branching and weak intermediate veins; marginal vein about equaling the laterals, nearly straight, less than 1 mm. from the margin (often 0.5 mm. and covered by the inrolled margin); blades dark and smooth above, without apparent glands at maturity, or with some small dark or impressed dots; lower surface paler, with numerous dark raised lustrous glands; peduncles axillary, 1-flowered, (1.5–) 3–4 cm. long, slightly compressed distally and 1.5 mm. wide below the bracts, which are delicate, lanceolate, 5 mm. long, falling

before anthesis; buds 8–10 mm. long exclusive of the appendages, pyriform; calyx-tube longer than the hypanthium, narrowed at the mouth, surmounted by 5 free erect or spreading foliaceous narrow appendages, these 1.5–3 mm. wide, 6–14 mm. long, with narrow base and lanceolate to linear body, nearly glabrous or strongly pubescent near base within; tube at anthesis breaking longitudinally down to the summit of the ovary into 5 ovate segments 4.5–5 mm. long and wide, these pubescent without, matted-tomentose within, tipped by the persistent appendages; disk nearly flat, 7–8 mm. wide with glabrous verrucose center 2.5 mm. wide, the hairy staminal ring 1–1.5 mm. wide; style up to 8 mm. long, glabrous, the peltate stigma 0.6–1 mm. wide; stamens about 300?, shorter than the style, the anthers linear, 1–1.6 mm. long; petals concave, hairy outside, up to 15 mm. long; fruit not seen.—A species of uncertain generic position, probably not especially closely related to *Calycolpus* and not very different from *Psidium*, but well marked by the unique appendages of the calyx. The plant has been collected as near the borders of Peru as the lowlands of eastern Ecuador, on the Río Pastaza (*Rimbach 268*). F.M. Neg. 23489.

Peru (probably). Amazonian Brazil, and Ecuador, to Venezuela and northern Colombia.

Psidium densicomum DC. Prodr. 3: 235. 1828.

A small tree, completely glabrous; branchlets somewhat compressed, not angled; leaves ovate, 3–5 cm. wide, 7–14 cm. long, mostly 2.3–3.3 times as long as wide, narrowed uniformly from below or near the middle to the sharply acute and mucronate tip, broadly rounded and finally shortly cuneate at the base, the margins decurrent on the rather slender petiole about 1 mm. thick, 5–9 mm. long; midvein flat above or concave near the base of the blade; lateral veins 5–10 pairs, not forming a marginal vein but strongly diminishing distally, each reaching a point 2 mm. or less from the margin, then recurving and joining the next succeeding vein; leaves green in drying, sparingly and inconspicuously gland-dotted, somewhat lustrous above, dull beneath; inflorescence axillary, 1-flowered, or in more vigorous individuals partly or all 3-flowered, the peduncle 2–4 cm. long, 0.7–1 mm. thick; bracts foliaceous, linear, sometimes petiolate, up to 5 mm. wide and 2.5 cm. long; pedicels in 3-flowered dichasia 10–18 mm. long; buds at maturity 12–15 mm. long, the hypanthium a little less than half this length, narrowly obconic, crowned by the flaring sinuately 5-lobed calyx 6–10 mm. across, the lobes broadly rounded, about 2 mm. high; calyx at maturity split-

ting irregularly between the lobes; style 9–12 mm. long, the biconvex stigma about 0.5 mm. across; petals white, 12–15 mm. long, elliptic or obovate; stamens 175–200, the longest about as long as the style, the anthers 1–1.5 (–2) mm. long; fruit globose, 1.5–2 cm. thick; seeds C-shaped, 8 mm. long, 5 mm. high, 2 mm. thick.—A most distinctive species, readily recognized by the complete lack of pubescence, and the pointed and mucronate, rather than acuminate leaves. F.M. Neg. 19711.

Loreto: Río Itaya above Iquitos, *Killip & Smith 29283, 29386.* Mishuyacu, *Klug 1552, 1560.* Río Putumayo, Peru-Colombia boundary, *Klug 1619.* Pebas, *Williams 1847, 1990.* Amazonian Brazil to central Colombia (Río Guaviare). "Ampi-yacu" (Williams). "Guayava silvestre" (Klug).

Psidium fulvum McVaugh, Fieldiana Bot. 29: 226. 1956.

A shrub or tree, the branchlets, vegetative buds, inflorescence, petioles and lower surfaces of the leaves densely tawny-hirsutulous with sharp, somewhat flexuous lustrous hairs up to about 0.5 mm. long, the upper surfaces of the leaves sparingly hairy with similar hairs, probably glabrescent in age; leaves broadly ovate, 3–5.5 cm. wide, 5–11 cm. long, 1.4–2 times as long as wide, rounded or obtusely pointed at tip, rounded at base, the margins shortly decurrent on the stout petiole 1.5 mm. thick, 4–11 mm. long; midvein impressed and hairy above, prominent beneath; lateral veins 8–10 pairs, somewhat impressed above, prominent beneath; marginal vein similar to laterals but weaker, strongly arched between them, 1–3.5 mm. from the margin; blades darkening in drying, dark brown and lustrous above, yellow-brown beneath; glands not apparent; inflorescences in the axils of old leaves or usually from the lower pairs of nodes of new leafy shoots, consisting of 3- to 7-flowered dichasia with the terminal flowers sessile, the peduncle 8–16 mm. long and more than 1 mm. thick, the pedicels of the second and third orders 3–7 mm. long; bracts and bracteoles probably linear, deciduous before anthesis; buds 3.5–6 mm. long, the hypanthium and calyx together broadly infundibuliform, truncate, 2.5–4 mm. long, surpassed by the globe of the petals; calyx-lobes 5, apically rounded but much elongated laterally, 2–2.5 mm. wide, 1–1.5 mm. long, hirsute on both sides, separated at the sinuses by short splits at full anthesis; disk strongly 5-angled and 5-lobed, 3–4.5 mm. wide, completely glabrous; style glabrous, 6 mm. long, with small capitate stigma; stamens about 200, crowded in the bud and at least the inner irregularly incurved, about 6 mm. long, the anthers about 0.5 mm. long; petals concave, broadly

obovate, 4–6 mm. long, hairy on the outer surface and prominently gland-dotted; ovary 3-locular, the ovules about 20 in each locule, attached about the margin of a stalked axile placenta and directed inward toward the center of the ovary.—In the absence of mature fruit the generic position of this species is somewhat uncertain, but the internal structure of the ovary is like that of *Psidium*, and the general appearance of the plant suggests that genus. Univ. of Mich. Neg. 484.

Amazonas: Chachapoyas, *Mathews* ["dernière collect."] (BM, type).

The type, and a duplicate at Kew, are in young bud. Another collection, without definite locality except "Chachapoyas," represented at Kew by two sheets, has the flowers and leaves fully expanded.

Psidium guajava L. Sp. Pl. 470. 1753. *P. pyriferum* L. Sp. Pl. ed. 2. 672. 1762. *P. pomiferum* L. l.c.

A shrub, or tree up to 10 meters high, pubescent on the young growth, and the inflorescence and at least the lower surface of the leaves sparingly or densely pubescent with mostly appressed, soft silvery-gray or pale reddish hairs up to about 0.5 mm. long; branchlets terete, or quadrangular with pronounced angles or low wings below the nodes; leaves elliptic or oblong, 3–6 cm. wide, (4.7–) 8–14 cm. long, mostly 2–3 times as long as wide, rather abruptly rounded or occasionally narrowed to the obtusely pointed or rounded tip, the base abruptly rounded or subcuneately narrowed, the margins decurrent on the stout petiole 1–2 mm. thick, 4–7 (–10) mm. long; veins prominent beneath, usually markedly impressed above; lateral veins 12–20 pairs, often conspicuous and parallel, not forming a marginal vein but diminishing distally, each approaching to within 1–2 mm. from the margin, then incurving and joined to the next succeeding vein by a strong straight perpendicular vein; upper surface of blade inconspicuously gland-dotted, glabrous or thinly pubescent, the small veins little or not at all elevated and scarcely apparent; lower surface finely appressed-pubescent or glabrous, thickly gland-dotted; inflorescence axillary, 1-flowered (very rarely 3-flowered), the peduncle (7–) 10–20 (–25) mm. long, 1 mm. or more thick, up to 2.5 mm. thick in fruit; bracteoles subulate, often glabrous, 3–4 mm. long; buds at maturity 13–16 mm. long, completely closed at tip, the hypanthium 5–7.5 mm. long, constricted at summit and thence enlarged into the ovoid pointed calyx; calyx at maturity splitting irregularly

into 4–5 lobes which are appressed-pubescent distally; proximal third of the calyx, and the summit of the ovary, glabrous; style 10–12 mm. long, the flat peltate stigma 0.5 mm. wide; petals white, elliptic, cucullate, 10–12 mm. long; stamens 150?–275, the longest as long as the style; anthers 0.8–1.2 mm. long; fruit globose or pyriform, 2–6 cm. long, yellow or pinkish.—In addition to the characters of foliage, branchlets, and pubescence, which have been used by Berg and by more recent authors to separate this species from the similar *Psidium guineense*, it transpires that the two plants may be separated also by the number of flowers, the average length of the peduncle, the size and shape of the buds, the length of the style and anthers. The two thus appear amply distinct. They are sufficiently similar, however, to make possible hybridization between them seem likely. Since both are cultivated throughout the tropics, opportunities for hybridization should not be wanting. Both *P. guajava* and *P. guineense* are highly variable with respect to unit characters, and this fact strengthens the case for postulating hybridization. I have seen few specimens from Peru that were not clearly referable to one species or the other, but from Ecuador northward along the eastern slopes of the Andes there are numerous collections which seem to represent a variable intermediate population. These plants often have the aspect and pubescence of *P. guineense*, but the leaves are relatively narrow, the peduncles often 1-flowered, the veins sometimes impressed. This is *Psidium lehmannii* Diels (Engl. Bot. Jahrb. 37: 594. 1906). A detailed analysis of this population in the field, combined with a revisionary study of the whole group of species which centers around *P. guajava*, would be a valuable contribution to the taxonomy of tropical cultivated plants.

San Martín: Tarapoto, *Williams 5534*.—Loreto: Near mouth of Río Chanuzi, *Ferreyra 5049*. Mishuyacu, *Klug 1036*. Above Pongo de Manseriche, border forest of Río Santiago, *Mexia 6267*. Yurimaguas, *Williams 4002*. Pebas, *Williams 1587*. Lower Río Nanay, *Williams 271, 552*. San Antonio, Alto Río Itaya, *Williams 3502*. Río Masana, *Williams 108, 187*.—Huánuco: Huánuco, *Macbride & Featherstone 2444*.—Junín: Debajo de Huacapistana, *Ferreyra 11197*. La Merced, *Killip & Smith 23428*. Colonia Perene, near "Hacienda 3," *Killip & Smith 25121*.—Lima: Chosica, *Macbride & Featherstone 522*.—Cuzco?: Hda. Panayoc, Valle Lares, *Diehl 2514*.—Locality uncertain: *Dombey 788; Ruiz & Pavón 23/84* (Herb. Madrid), *Ruiz & Pavón s.n.* (Herb. Barbey-Boissier); ex Reliquiae Bourgaeanae, March, 1870. Cultivated throughout the tropics and

often spreading and becoming established and weedy. Known throughout Spanish America as "guayabo" (the tree), and "guayaba" (the fruit), (English, guava).

A plant resembling this species but the veins 10–12 only, and the peduncles 3-flowered, may represent a hybrid between *P. guajava* and *P. guineense* (*Williams 3226*, from Paraíso, upper Río Itaya, Loreto).

Psidium guineense Sw. Prodr. 77. 1788. *P. araca* Raddi, Mem. 5. *pl. 1.* 1821. *P. ooideum* var. *longipedunculatum* Rusby, Mem. Torr. Bot. Club 3, no. 3: 27. 1893.

A shrub or small tree, up to 7 meters high, usually heavily pubescent on the young growth, the inflorescence and at least the lower surface of the leaves with erect, soft, flexuous, pale- or coppery-red hairs up to 1 mm. long; branchlets nearly terete to moderately compressed, rarely with definite angles below the leaf-bases; leaves broadly elliptic or sometimes obovate, (2.7–) 4–6 (–8) cm. wide, (3.5–) 6–10 (–14) cm. long, (1–) 1.6–2 times as long as wide, abruptly narrowed about equally to the rounded base and to the rounded or obtusely pointed apex, or narrowed gradually from above the middle toward the rounded or rarely subcuneate base; margins decurrent on the stout petiole 1–2 mm. thick, 5–10 mm. long; midvein slightly impressed above, prominent beneath; lateral veins 6–10 pairs, plane or nearly so above, prominent beneath, strongly ascending, not forming a marginal vein but each lateral decreasing distally, curving toward the tip of the leaf, and inward, from a point 1–2 mm. from the margin, sometimes connected to the next lateral by a strong straight perpendicular vein near the tip; upper surface of leaf inconspicuously gland-dotted, usually somewhat pubescent (at least with a line of reddish hairs along the midvein), often with numerous evident small veins which are slightly elevated when dry and form a prominent pattern at right angles to the midrib and at an acute angle to the lateral veins; lower surface persistently pubescent, thickly and conspicuously gland-dotted; inflorescence an axillary dichasium, usually 3-flowered but 1-flowered in some axils, or in occasional plants (about 1 in 10 as far as known), all 1-flowered; peduncle (12–) 17–32 mm. long, 1–2 mm. wide near summit and there somewhat compressed; central flower sessile or nearly so, the two lateral ones on pedicels 8–12 mm. long; bracts and bracteoles linear or subulate, about 3 mm. long, or the bracts leafy and up to 1.5 cm. long; bracteoles often with abortive axillary buds; buds at maturity 10–12 mm. long, incompletely closed at tip, the hypan-

thium 4–5 mm. long, constricted at summit and thence enlarged into the obtusely pointed or nearly globose calyx; calyx at maturity splitting irregularly into 4–5 lobes which are appressed-pubescent distally; proximal third of the calyx, and the summit of the ovary, glabrous; style glabrous, 7–11 mm. long, the flat peltate stigma 0.5 mm. wide; petals white, elliptic, cucullate, 10–14 mm. long; stamens about 150–200, as long as the style or shorter; anthers 1.2–2.2 mm. long; fruit globose or pyriform, 1–2 cm. in diameter, yellowish-green (Steinbach), edible, with a delicate acid taste (Steinbach).

Amazonas: Chachapoyas, *Mathews.*—San Martín: Tarapoto, *Williams 5602.*—Loreto: Caballo-Cocha, *Williams 2157.*—Huánuco: Hda. Villcabamba on Río Chinchao, *5003.* Cuchero, *Poeppig 1235.*—Cuzco: Río Chaupimayo, Prov. Convención, *Soukup 795.* Throughout tropical America, often cultivated, from northern Argentina to the West Indies and Mexico. "Guayabillo," "Guayaba brava" (Williams), "Sacha guayaba" (Williams), "Huayava" (Quechua, Williams).

Psidium maribense Mart. ex DC. Prodr. 3: 233. 1828. *P. crenatum* Berg, Linnaea 27: 373. 1856.

A shrub, or treelike, up to 2 meters high, with terete or compressed branchlets, finely pubescent with soft crisped sordid hairs up to 0.3–0.4 mm. long, or a little longer on the petioles, the hairs abundant and mostly erect on the branchlets, peduncles, petioles and veins of the lower leaf-surface, scattered and appressed elsewhere on the lower leaf-surface, and mostly wanting from the upper leaf-surface except along the midvein; leaves elliptic, oblanceolate, cuneate or obovate, crenate especially distally, with up to 25 or more shallow notches on each side, at least the larger notches with a gland at base; blades 1–2 (–2.5) cm. wide, 2–7 cm. long, (1.3–) 2–2.5 (–3.3) times as long as wide, obtusely pointed to rounded or emarginate, cuspidate, the cusp often oblique or turned down and appearing subterminal and dorsal; base rounded to obtuse or, especially on shoots, cuneate, the margins decurrent on the petiole 0.5–0.8 mm. thick, 1.5–4 mm. long; midvein shallowly impressed or plane above, prominent beneath; lateral veins 6–10 pairs, obscure above, prominulous beneath, diminishing distally, not forming a marginal vein but recurving 0.5–1 mm. from the margin to join the next succeeding vein; blades nearly concolorous, or darker and more lustrous above, gland-dotted both sides or the glands obscure in age; flowers solitary, axillary, the peduncles 7–18 mm. long, nearly terete and

up to 1 mm. thick (to 1.6 mm. in fruit); bracts borne at the summit of the peduncle, deciduous, subulate, ciliate, 1.5 mm. long; buds glabrous, about 12 mm. long, with prominent dark elevated dots, the hypanthium obconic or narrowly obovate, 4 mm. long, expanded abruptly at the summit to the pale, ovoid, shortly apiculate calyx 5–6 mm. in diameter, 8 mm. long; calyx at anthesis splitting longitudinally into 2 nearly equal divisions; disk about 5–6 mm. wide, the staminal ring hairy, the glabrous center about 2.5 mm. wide; style glabrous, 9–17 mm. long; stamens about 250, 10–12 mm. long, the anthers 0.7 mm. long; petals 8, concave, unequal, the outer ones broadly ovate, 8–12 mm. wide, 15 mm. long; fruit subglobose or a little prolonged at base, 1–1.7 cm. in diameter.—This species is rather widely distributed in the lowlands of the upper Amazon drainage, from Brazil to Venezuela; the type came from Maripi on the Rio Japurá, Brazil. *Psidium crenatum* was distinguished by Berg on the basis of its oblong leaves acute at base, as contrasted to obovate leaves cuneate at base as in the type of *P. maribense*. Examination of the type of *P. maribense*, and other specimens, indicates that cuneate leaves tend to occur on vigorous shoots, whereas shorter leaves with acute bases predominate on fruiting branches. F.M. Neg. 19715.

Peru (probably). Amazonian Brazil to Venezuela.

Psidium pedicellatum McVaugh, Fieldiana Bot. 29: 227. 1956.

Tree 12 meters high, the branchlets and young growth puberulent with erect or crisped sordid hairs to 0.2 mm. long, a few hairs persistent on the inflorescence and the veins of the lower leaf-surface; leaves (immature) broadly elliptic-ovate, 2–3.5 cm. wide, 3–5.5 cm. long, about 1.5 (–2) times as long as wide, the tip shortly acuminate, the base acute or somewhat rounded, the margins decurrent on the petiole 1 mm. thick, 3–5 mm. long; midvein above pubescent, impressed, prominent beneath; lateral veins 7–10 pairs, not prominent above, more so beneath, appearing to terminate in the marginal vein which is weaker than the laterals and strongly arched between them, 1–4 mm. from the margin; glands not apparent even in young leaves; blades darker and lustrous-green (Steyermark) above, dull beneath; flowers in dichasia, these axillary on new shoots, up to 3 cm. long, 3- (to 4-) flowered, or the flowers solitary at the lowest node and subtended by ovate bracts 2 mm. long; peduncle in 3-flowered dichasium 1–1.5 cm. long, slightly compressed and 1 mm. wide at summit, the filiform branches 5–6 mm. long, divaricate; bracts deciduous before

anthesis, lanceolate, up to 1.5 mm. long, the bracteoles similar, smaller; buds glabrous, about 5 mm. long, turbinate, broadly expanded above the obconic hypanthium; calyx much exceeded by the expanding corolla, its margin arcuate-undulate with 5 low ciliate bluntly pointed lobes, these 0.8–1 mm. high, the sinuses splitting down slightly after anthesis; disk glabrous, about 2.5 mm. wide; style 4–5 mm. long, the stigma subpeltate; stamens about 150, probably as long as the style, the anthers about 0.4 mm. long; petals suborbicular, concave, 5 mm. long and wide; ovary bilocular, the ovules about 20 in each locule, in a double incurved row about the margin of an apparently peltate placenta; fruit unknown.—Known only from the type, *Steyermark 54571*, from Quebrada Honda, Santiago-Zamora, Ecuador. Univ. of Mich. Neg. 472.

Peru (probably). Southern Ecuador.

Psidium rostratum McVaugh, Fieldiana Bot. 29: 227. 1956.

Shrub or tree to 10 meters high, sparingly pubescent or strigose in the inflorescence (very densely so on the inner surface of the calyx), and on leaves, petioles and young shoots, with yellowish hairs up to 0.5 mm. long; leaves somewhat irregularly ovate to oblong or even obovate, 5–7 cm. wide, 10–14 cm. long, about twice as long as wide, acute or blunt-tipped, the base rounded to acute, the margins more or less cuneately decurrent on the petiole 1–1.5 mm. thick, 5–7 mm. long; midvein impressed above, but at least distally flattened and then depressed below the surface, prominent beneath; lateral veins 10–15 pairs, probably impressed above on the mature leaves, prominent beneath, not forming a marginal vein but diminishing distally, recurving from a point 1–2 mm. from the margin to join the next adjacent vein; leaves smooth and essentially glabrous, dark and probably somewhat lustrous above, paler and more yellow, dull and somewhat hairy beneath, both surfaces with numerous small open glandular depressions of varying sizes; peduncles axillary, 1-flowered, 1.5–4 cm. long, flattened, 1–1.3 mm. wide near summit, on new leafy shoots or the lowest 1–3 pairs at leafless nodes, or the axis abortive beyond them and appearing racemose; bracts deciduous before anthesis, but the broad-based subulate stipuloid processes persistent, 0.6 mm. long; flowers sessile, the bud closed, glabrous except at very tip, 12–16 mm. long including the narrowly obconic hypanthium 3–4 mm. long, the broadly obovoid or subglobose body 7–9 mm. long, and the narrowly linear or subulate tip 2–5 mm. long; calyx rupturing irregularly at anthesis, not into definite lobes but the tip often

breaking away as an ill-defined operculum; disk 12–14 mm. wide, the glabrous center 4–4.5 mm. wide, the short-hairy staminal ring 3–4 mm. wide; style 10–13 mm. long, the stigma narrowly peltate; stamens very numerous, probably about 300, as long as the style, the anthers linear, 0.8–1 mm. long; petals white, obovate, short-ciliate, about 10 mm. wide, 16 mm. long.—Univ. of Mich. Negs. 471, 494.

Túmbez: Mountains east of Hacienda Chicama, 900–1000 meters, deciduous bushwood, Feb. 19–24, 1927, *A. Weberbauer 7648* (F, type). "Guayavo."

Psidium rutidocarpum R. & P. ex G. Don, Gen. Hist. 2: 833. 1832. *P. rypdocarpum* R. & P. Fl. Peruv. & Chil. 4: *t. 420b*, ined. [?1802]. *P. ruizianum* Berg, Linnaea 27: 365. 1856. *P. xidocarpum* Ruiz herb. ex Berg, l.c., nomen. *P. pratense* Poepp. herb. ex Berg, l.c., nomen.

A shrub 5 meters high, or according to Poeppig a tree 16–20 feet high, with thin straw-colored spotted bark; twigs, inflorescence and lower leaf-surface (especially on the veins) pubescent with erect soft, pale brownish, flexuous hairs up to 0.5 mm. long; branchlets somewhat four-angled; leaves lanceolate or narrowly ovate, 1.5–3 cm. wide, 4.5–11 cm. long, mostly 3–4 times as long as wide, gradually narrowed to a slender blunt tip or slenderly acuminate, rounded at base, the margins decurrent on a stout petiole 1 mm. or more thick, 2–6 mm. long; midvein and lateral veins impressed above, prominent beneath; lateral veins 12–20 pairs, not forming a marginal vein but strongly diminishing distally, each reaching a point 1 mm. or less from the margin, then turning abruptly to join the next succeeding vein; leaves browning in drying, the upper surface dark, smooth and glabrous, the glands and small veins not readily apparent; lower surface reddish-brown, dull, hairy on the principal veins, with numerous small dark glandular dots and numerous delicate reticulate veinlets, the latter glabrous or nearly so; peduncles axillary, 1-flowered, 1–1.5 mm. thick, 12–20 mm. long; complete bud and flower not seen; bud (according to Berg) 10 mm. long, oblong, closed, somewhat acute, not cuspidate; calyx at maturity splitting irregularly into about 4 lobes, these nearly glabrous without, thickly appressed rufous-pubescent within except at base; disk glabrous; style (ex Berg) strigose, 6 mm. long; petals (ex Berg) 4, subrotund, 8 mm. long; stamens about 175; fruit ovoid, according to Poeppig hard, bitter and scarcely edible, about 1–2 cm. long, up to 1.5 cm. thick,

the surface roughened with 8–15 irregular longitudinal ridges.—F.M. Neg. 36420.

Huánuco: Cerro San Cristóbal ad Cuchero, *Poeppig 1716* (or *142*), paratype of *P. ruizianum;* type of *P. pratense.* Abajo de Muña, valle del Río Huallaga, 1800–1900 meters, *Weberbauer 6793.* Pozuzo, *Ruiz,* type of *P. ruizianum* and *P. rypdocarpum.*

Sterile shoots of a plant resembling this species, but having the leaves pubescent above, loosely ochraceous-woolly beneath, and prominently dotted with reddish glands on both surfaces, were collected by O. F. Cook and G. B. Gilbert (no. *1575,* Herb. US) at Santa Ana, alt. ca. 900 meters, June 29, 1915.

Psidium sp.

A shrub or tree with foliage and pubescence superficially resembling those of *Eugenia ulei.* Williams' specimen cited below was originally thought to represent a fruiting specimen of *E. ulei* (*Psidium ulei* Diels), which is known only from a flowering specimen. Williams' plant, however, appears to be a true *Psidium;* the inflorescence is an axillary dichasium, 1- to 3-flowered, with peduncle 2.5–3 cm. long; the fruit is pyriform or subglobose, 1.5–2 cm. in diameter, 1.5–2.5 cm. long; the seeds are numerous, reniform, pale tan in color, 4–5 mm. long, with hippocrepiform embryo. The plant appears to differ from other Peruvian species of *Psidium* in its large calyx-lobes, 7–9 mm. long; these apparently separate lobes may have resulted from longitudinal slits in a partially closed calyx, for in the fruiting specimens collected by Williams the persistent lobes are somewhat irregularly shaped and the edges are broken.

San Martín: Tarapoto, *Williams 6173.*

DOUBTFUL SPECIES

Psidium raimondii Burret, Repert. Sp. Nov. 50: 56. 1941. The type of this species is *Raimondi 4752,* formerly in Herb. Berlin. Paratypes are Raimondi's numbers 3920, 3473, 6589. I have not been able to see any of these specimens, and the identity of the species remains wholly in doubt. It was described as glabrous, with small leaves (2.5–4.3 cm. long, 2 cm. wide) densely and minutely tuberculate-glandular on both surfaces; the flowers solitary or in slender 2- or 3-flowered dichasia; calyx almost truncate, with obscurely repand-undulate margin. The type specimens were collected at a locality called Montaña de Nancho, Prov. Hualgayóc, Cajamarca, Peru.

10. UGNI Turcz.

Reference: Berg, Linnaea 27: 384–393. 1856.

Shrubs with numerous small coriaceous leaves mostly 2 cm. long or less. Calyx-lobes distinct, 5, rarely 4. Flowers solitary, with persistent foliaceous bracteoles. Stamens numerous (25 or more), the filaments somewhat flattened and dilated, the outer longer and broader, the anthers sagittate, introrse, basifixed and sometimes winged by the margins of the dilated connective. Ovary 3- or 4-locular (according to Berg), the numerous ovules horizontal, affixed to the central bilamellate placentae. Seeds reniform or hippocrepiform, with bony testa, the embryo arcuate.

A genus of about 10 species or fewer, in montane forests from southern Mexico to Chile. It is distinguished technically from *Myrtus* by the characteristic stamens, and from *Myrteola* by the stamens, by the somewhat larger leaves and by the usually 5-merous flowers.

Ugni myricoides (HBK.) Berg, Linnaea 27: 391. 1856. *Myrtus myricoides* HBK. Nov. Gen. & Sp. 6: 131 (folio ed. p. 104). *t. 539.* 1823.

A shrub up to 2 meters high, the branchlets, inflorescence and young foliage strigose-canescent with sordid hairs; leaves elliptic, rigidly coriaceous, 3–8 mm. wide, 8–16 mm. long, about twice as long as wide, acute at both ends, the apex often glandular-pointed, the petiole about 2 mm. long; midvein narrowly sulcate above, broad and prominent beneath, the other veins not apparent; blades lustrous, convex, dark green and impressed-punctate above, paler and dull beneath, with a few small glandular dots; flowers spreading or in age recurved, the pedicels 9–12 mm. long, 0.5 mm. thick; bracteoles in texture like the leaves, elliptic or lanceolate, spreading or at last recurved, 1–1.5 mm. wide, 4–7 mm. long; hypanthium sessile in the bracteoles, hemispheric, 2–3 mm. high; calyx-lobes 5 (sometimes 4 in a few flowers on the same plant), foliaceous, narrowly triangular or oblong with an acute tip, ascending or in fruit radiately spreading, 1.3–1.7 mm. wide at base, 2.5–3.5 mm. long; disk 2–2.5 mm. wide, finely and sparingly pilose; style glabrous, 4 mm. long, with capitate stigma; stamens 25–30, rose-purple, the outer 2.5 mm. long; anthers 0.8 mm. long, merely sagittate, not winged; petals white, 4–5 mm. long; fruit globose, white, about 7 mm. in diameter; seeds 15–20, broadly reniform, 1.5–2 mm. long, straw color, lustrous. —The above description is based on Colombian specimens. In the original description of *Myrtus myricoides* the type locality was given

as Peru, and the type specimen, in the Paris Herbarium, is labeled "Peruvia" with no further data. Comparison of specimens (see also a photograph of the type, F.M. Neg. 36895) leaves no doubt of the identity of *M. myricoides*, which is a common and well-known species of the region near Bogotá, Colombia, where Humboldt and Bonpland made extensive collections. There are no other Peruvian records for this species, or indeed for any other species of *Ugni*, and it is probable that Kunth was in error in ascribing the Bonpland specimens to Peru. The present plant, however, superficially resembles *Myrteola vaccinioides* (HBK.) Berg, for which the type locality is exactly the same (i.e. "Peru," without definite locality, both according to the type specimen, and to Kunth's published account, HBK. Nov. Gen. & Sp. 6: 130. 1823). It may be that the Colombian and Peruvian species were confused by Bonpland in the field and separated later, after the records of their respective origins had been lost.

A recent collection of *Ugni myricoides* from southern Ecuador (Prov. Azuay, *F. Prieto no. P-298*) suggests that the species may ultimately be found in Peru. This Ecuadorian plant, however, is not identical with that described above, which has long pedicels and long acute calyx-lobes (both well shown by Kunth in HBK. Nov. Gen. & Sp. 6: *t. 539*. 1823). Prieto's plant, which is in fruit, has the pedicels 5 mm. long and mostly hidden by the leaves; the calyx-lobes are obtuse or bluntly pointed, 2–2.5 mm. long and almost 2 mm. wide at base.

In the Moricand herbarium, now at Geneva, is a specimen of *Ugni molinae* Turcz., a Chilean species, which is labeled "Myrtus lanceolata Peru Pavon." It was received by Moricand from Pavón in 1827, doubtless at the same time as some other specimens which are discussed above, under *Eugenia*. The presumption is that the present specimen originated in Chile and was erroneously supposed by Moricand to have come from Peru.

Peru (probably). Venezuela and Colombia to southern Ecuador.

11. MYRTEOLA Berg

Reference: Berg, Linnaea 27: 393–397. 1856.

Low shrubs, upright, or prostrate and subherbaceous, with persistent coriaceous vaccinioid leaves 1 cm. long or less. Calyx-lobes distinct, 4, rarely 5. Flowers solitary, with persistent foliaceous bracteoles. Stamens few (8–20) or numerous (30–65), the filaments

filiform, the anthers elliptic-oblong. Ovary 3- (rarely 2-) locular, the placentae bilamellate, the ovules often 6–8 in a series. Seeds reniform or hippocrepiform, with bony testa, the embryo arcuate.

This is a small and easily recognized Andean group, ranging from Venezuela to southern Chile. Fewer than 15 species have been described and of these hardly more than 5 or 6 are valid, but general agreement as to specific limits will not easily be reached. As Kausel has pointed out with special reference to the Chilean species, constant characters are few and intermediate forms are abundant. Apparently the genus comprises two principal genetic lines, one occupying the whole range of the genus and the second in the central Andes from Bolivia to Ecuador. Plants of the one series are often prostrate or subherbaceous, or with extensive rhizomes and short upright flowering branches; the stamens are relatively few (20 or fewer), the leaves are relatively broad and glabrous and tend to become bullate in drying, i.e. the epidermis of the lower surface separates from the parenchyma and the surface becomes puckered and more or less featureless. Two species of this series, *Myrteola oxycoccoides* of Colombia and Ecuador and the Chilean *M. nummularia* (Poir.) Berg, are closely similar and perhaps actually conspecific; this is one of the few cases in which a definite relationship can be pointed out between the near-endemic myrtaceous flora of Chile and that of the rest of South America. The second series in *Myrteola* includes several upright shrubs which are usually 1–2 meters high; the stamens are more numerous (30–65), and the leaves are relatively narrow and more generally pubescent, with less tendency to become bullate.

As in so many other Andean genera of high altitudes, isolated populations in *Myrteola* often show individual differences. Variation in some characters (e.g. pubescence, leaf-shape, and stamen-number) seems extreme, suggesting the possibility of past or present gene interchange between the two series. The following arrangement of the Peruvian species is a somewhat formalized one which might be modified after field studies.

Berg seems to have been unaware of the polyandrous condition in this genus (although the type species, *M. microphylla*, has numerous stamens), and he indeed based *Myrteola* chiefly upon the 4-merous flowers and the oligandrous condition, neither of which is constant in the group.

Whole plant glabrous or essentially so, subherbaceous, the stems prostrate and forming small mounds; leaves 6 mm. long or less,

often blunt-tipped and broadly ovate, the length/width ratio 1.25–1.7; stamens 12 or fewer; northern Peru to Venezuela.
M. oxycoccoides

At least the young branches densely pubescent (in exceptional individual plants glabrous, but the leaves narrow and the plant an erect shrub with numerous stamens).

Leaves with strongly revolute margins, appearing oblong-linear, narrowly lanceolate, or sagittate; lower leaf-surface densely strigose or setose like the branchlets and hypanthium with upwardly appressed white or blackish hairs 1 mm. long; bracteoles 2.5–3 mm. long; stamens more than 30; Ecuador and northern Peru.

Calyx-lobes 5; branchlets sparingly setose, the hairs coarse and rigid; leaves setose on the midrib beneath and sometimes somewhat hispid.....*M. acerosa*

Calyx-lobes 4; branchlets strigose with abundant, somewhat silky hairs; leaves similarly strigose and often tomentose as well.....*M. microphylla* var. *microphylla*

Leaf-margins not or scarcely revolute, the blades ovate, elliptic or lanceolate; lower leaf-surface glabrous or sparingly strigose especially on the midvein and near the margins; hairs and stamens various.

Stamens 20 or fewer; leaves mostly broadest below the middle, with a tendency to become bullate at least in age; plants with extensive rhizomes, the flowering branches prostrate or erect, often less than 20 cm. high (up to 1 meter); bracteoles 1.5–3 mm. long; calyx-lobes 1.5–2 mm. long.

Leaves narrowly lanceolate, 1.5–2 mm. wide, 6–7 mm. long, bullate from the first, the midvein not apparent beneath.
M. vaccinioides var. *carabaya*

Leaves ovate, 2.5–5 mm. wide, 4–8 mm. long, bullate in age or not at all, the midvein apparent at least in young leaves.....*M. vaccinioides* var. *vaccinioides*

Stamens 30–65; leaves broadest near the middle or but slightly below it, not bullate or only exceptionally so, the midvein apparent beneath; erect shrubs mostly 1–2 meters high; bracteoles 3.5–6 mm. long; calyx-lobes 2.5–3.5 mm. long.

Leaves bluntly acute, elliptic to ovate-elliptic, 6–8.5 mm. long, mostly 2–2.5 times as long as wide.
M. microphylla var. *glabrata*

Leaves narrowly acute, elliptic to lance-elliptic, 7–10 mm. long, mostly 2.5–3 times as long as wide. . . *M. weberbaueri*

Myrteola acerosa (Berg) Burret, Notizbl. Bot. Gart. Berlin 15: 495. 1941. *Myrtus acerosa* Berg, Linnaea 29: 253. 1858.

Probably a small erect shrub, the branchlets, petioles and inflorescence sparingly or closely setose with antrorsely appressed or spreading coarse rigid pale or blackish hairs about 1 mm. long; blades 4–7 mm. long, coriaceous, narrowly sagittate when dry, with margins strongly inrolled especially near the tips, 1.5 mm. wide in the rolled condition, rugulose, impressed-puncticulate and glabrous above or sparingly strigulose, sparingly setose beneath at least on the midvein; petiole 1 mm. long; peduncles 4–5 mm. long; bracteoles narrowly ovate, blunt-tipped, flat, 1.5 mm. wide, 3 mm. long, exceeding the hypanthium; flowers 5-merous; calyx-lobes obtusely triangular, up to 1.5 mm. wide, 2.5 mm. long; stamens "48 or more" (Berg) to 75, the filaments up to 4.5 mm. long, the anthers 0.5 mm. long; style 4.5 mm. long; petals suborbicular, 3–4 mm. long, ciliolate; fruit not seen; ovary 2- (Berg) or 3-locular, each locule with 2 ascending ovules.—A little known species, originally referred by Berg to *Myrtus* because of the numerous stamens and the 5-merous flowers. In spite of these features its similarity in all details to the other species of *Myrteola* is so great that I have no hesitation in following Burret in this disposal of it. The Weberbauer specimen agrees precisely with Berg's detailed description and is doubtless a topotype.

Amazonas: Entre los Tambos Bagazán y Almirante, camino de Chachapoyas a Moyobamba, 2200–2300 meters, *Weberbauer 4453* (herb. USM); Bajasan, *Fielding 1448* (herb. Petrop., not seen, type).

Myrteola microphylla (Humb. & Bonpl.) Berg, Linnaea 27: 393. 1856. *Myrtus microphylla* Humb. & Bonpl. Pl. Aequin. 1: 19. *pl. 4.* 1808.

A shrub up to 1 meter high (to 2 meters according to Humboldt & Bonpland) with densely hirsute to abundantly hispid branchlets; leaf-blades glabrous to densely canescent-tomentose beneath; peduncles 3–9 (–15) mm. long; bracteoles 3–5.5 mm. long, often linear and 1 mm. wide, sometimes spatulate and 2.5 mm. wide, usually much exceeding the hypanthium; flowers mostly 4-merous; calyx-lobes (1.5–) 2–3.5 mm. long, triangular, blunt-pointed and gland-tipped; stamens about 30–65 in two or three series, the filaments white, and

up to about 4 mm. long; anthers 0.4 mm. long; style about 4 mm. long; petals white; fruit red or pale pink, oblate, about 4–5 mm. across; seeds about 1.4 mm. wide, 1.6–1.8 mm. long.—The following varieties, although apparently distinct taxa of subspecific rank, are not connected by any known intermediates and perhaps should be regarded as separate species; on the other hand it seems not improbable that all these and *M. weberbaueri* together may comprise a single species.

Myrteola microphylla [var.] γ **glabrata** Berg, Linnaea 30: 709. 1861. *M. microphylla* var. *australis* Diels, Bot. Jahrb. 37: 593. 1906.

Leaves somewhat variable, but usually appearing elliptic rather than definitely ovate; branchlets occasionally glabrous (e.g. *Stork & Horton 10356, p.p.*).—Distinguished from *M. weberbaueri* by the more broadly pointed leaves and, at least in dried material, by the somewhat more fleshy and resinous calyx and bracteoles and the harder and more highly polished leaves.

Cajamarca: Cutervo, *Raimondi 4499*.—Junín: Entre Carhuamayo y Paucartambo, *Tovar 418*.—Huancavelica: Surcubamba, 2,600 meters, *Stork & Horton 10356*.—Ayacucho: Huanta, 13,000 feet, *Pearce* (herb. BM).—Cuzco: Cordillera Veronica, *Rauh & Hirsch P1960*. Machu Picchu, *Rauh & Hirsch P846*. Paso de Tres Cruces, Cerro de Cusilluyoc, 3,800–3,900 meters, *Pennell 13822b, 13822d;* 3,400–3,700 meters, *Pennell 13907*. Laderas de Acanaca, 3,600 meters, *Vargas 310*. Huayna Picchu, *Tutin 1248*.—Puno: San Govan, *Lechler 2209*. Prov. Carabaya, *Weddell 4649*. Near Limbani, *Metcalf 30509*. Bolivia. "Macha-macha."

Myrteola microphylla var. **microphylla.** *Myrtus microphylla* Humb. & Bonpl., as to type. *Myrtus phylicoides* Benth. Pl. Hartw. 131. 1844. *Myrteola microphylla* α *angustifolia* Berg, Linnaea 30: 709. 1861. *M. microphylla* β *latifolia* Berg, l.c.

Distinctive because of the strongly inrolled leaf-margins and the resulting linear or very narrowly lanceolate leaves; also characterized by the strongly canescent-hirsute branchlets, flowers and lower leaf-surfaces.—F.M. Negs. 7926, 23479.

Amazonas: Tambo Ventanillas, al oriente de Chachapoyas, 2,400–2,600 meters, *Weberbauer 4402*. Province of Chachapoyas, *Mathews*. —Huánuco: Chinchao, *Raimondi 9152*. Vicinity of Loja, Ecuador.

Myrteola oxycoccoides (Benth.) Berg, Linnaea 27: 396. 1856. *Myrtus oxycoccoides* Benth. Pl. Hartw. 174. 1845.

Prostrate or creeping, the stems coppery-red (Penland), subherbaceous, up to 10 cm. long, forming small mounds, the whole plant glabrous or with a few hairs on the young growth and in lines along the branchlets; peduncles 2–6 mm. long; bracteoles ovate or elliptic, rounded at tip, 2–3 mm. long; flowers 4-merous; calyx-lobes 1.5–2 mm. long, elliptic-oblong, round-tipped; stamens 8–12; filaments about 3 mm. long; anthers about 0.4 mm. long; style about 3 mm. long, slightly exceeding the stamens; petals white to pinkish-red, about equaling the stamens; fruit yellow ("flavida") according to Bentham, but usually pink or red.—Readily identified by the glabrous herbage, the small, very broad blunt leaves and the small, often pink, flowers; the habit is also distinctive. Apparently rare in Peru, but relatively common northward.

Junín: Cerros al oeste de Huacapistana, 3,300–3,500 meters, *Weberbauer 2219* (Herb. USM). Southern Ecuador to central Colombia and Venezuela.

Myrteola vaccinioides (HBK.) Berg, Linnaea 27: 395. 1856. *Myrtus vaccinioides* HBK. Nov. Gen. & Sp. 6: 130 (folio ed. p. 104). 1823.

A shrub with often extensively creeping rhizomes, the flowering branches prostrate or erect; leaves ovate or lanceolate, often bullate, mostly glabrous beneath; flowers usually 4-merous; bracteoles and calyx-lobes relatively short; stamens 20 or fewer, the anthers 0.4 mm. long.—Possibly hybridizes, or has done so in the past, with *M. oxycoccoides*, from which it is not widely separated geographically.

Myrteola vaccinioides var. **carabaya** McVaugh, Fieldiana Bot. 29: 228. 1956.

Erect flowering branches 6–15 cm. high, strigose-hispidulous with antrorsely curved hairs; leaves, bracteoles and calyx-lobes ciliate; blades acute at tip, cuneately narrowed to the petiolar base 1–1.5 mm. long; upper surface polished, thickly impressed-punctate; peduncles about 2 mm. long; bracteoles linear, 2–2.5 mm. long; calyx-lobes 2 mm. long, narrowly triangular; style 2 mm. long, the stigma peltate; stamens about 15, as long as the style; fruit 3 mm. in diameter.—Univ. of Mich. Neg. 428. Further research and examination of additional material may well show that this is an independent

species, but the stamen-number, habit, and all vegetative characters except the leaf-shape seem to link it to *M. vaccinioides*.

Puno: Prov. Carabaya, June–July, 1847, *Weddell 4667* (herb. Paris, type). Bolivia.

Myrteola vaccinioides var. **vaccinioides.** *Myrtus vaccinioides* HBK., as to type. *Myrteola nannophylla* Burret, Notizbl. Bot. Gart. Berlin 15: 494. 1941.

Erect flowering branches 30 cm. high or less, hirsute (often rufescent or nigrescent); peduncles 1–3 (–6) mm. long; bracteoles linear to elliptic, 1.2–2.5 mm. long, blunt-pointed or rounded at tip, often shorter than the hypanthium; calyx-lobes 1–2 mm. long; stamens 8–15 (–20), the filaments and style about 2.5–4 mm. long; petals pale pink; fruit pink or white, globose, about 5 mm. across.—Usually easily recognizable even in fruit by the combination of ovate leaves and the short bracteoles and calyx-lobes. F.M. Neg. 36909.

Huánuco: Between Huánuco and Pampayacu, 10,000 feet, *Kanehira 2*. Playapampa, sphagnum montaña, 9,000 feet, *4527*. Valley of Río Pozuzo, below Saria, 2,900–3,000 meters, *Weberbauer 6785*. Sariapampa, 3,600 meters, *Woytkowski 313* (Univ. of Calif. 4th Exped. to Andes no. 34313).—Junín: Altos de Palca, *Isern 582*. Cerros al oeste de Huacapistana, 3,000–3,100 meters, *Weberbauer 2064;* al este de Huacapistana, 3,200–3,300 meters, *Weberbauer 2259*. Ecuador to Bolivia.

Myrteola weberbaueri Diels, Bot. Jahrb. 37: 593. 1906.

A shrub 1 meter high; leaves 3–4 mm. wide, 8–10 mm. long, glabrous beneath or with a few hairs on the midvein, the midvein evident beneath; margins often ciliate; branchlets hirsute, the hairs rufescent; peduncles 4–6 (–10) mm. long; bracteoles linear, acute, 1 mm. wide, 4–5 mm. long; flowers 4-merous; sepals long-triangular, attenuate to a blunt tip, 3–3.5 mm. long; stamens 35–45, the filaments up to 3 mm. long, the anthers 0.5 mm. long; style 3.5–4 mm. long; petals white, about as long as the stamens; fruit globose, 4–5 mm. across.

Huánuco: Monzón, 2,000–2,500 meters, *Weberbauer 3533* (cited by Diels, Herb. Berlin, not seen).—Ayacucho: Cordillera of Huanta, 12,000–13,000 feet, *Pearce*, Feb., 1867 (herb. BM). Tambo to Río Apurímac, 3,400 meters, *Weberbauer 5566*. Putis, Choimacota Valley, 3,400–3,500 meters, *Weberbauer 7522*.—Cuzco: Cuzco to Santa Ana, below Yanamanche, *Weberbauer 4977* (cited by Diels, Herb. Berlin, not seen).

12. BLEPHAROCALYX Berg

Reference: Berg, in Linnaea 27: 412–415. 1856; and in Mart. Fl. Bras. 14, pt. 1: 420–429. 1857.

Calyx 4-lobed, the lobes in two unequal pairs (the inner larger), all thin-margined and fimbriate-ciliate toward the apex, deciduous after anthesis. Ovary bilocular, multiovulate. Seed with membranaceous testa. Embryo spiral or subspiral. Inflorescence an axillary dichasium (in Peruvian species 3- to 7-flowered) with the central flowers sessile.

A genus of more than 20 described species, of which all but the following are natives of the south-Brazilian–Uruguayan region. The generic position of *B. salicifolius* is not well established because the species has not been collected in fruit; it is known, indeed, from three collections only; the type, collected by Bonpland near Loja, Ecuador, is in young flower; modern specimens, collected by Steyermark (no. 53718) and by Camp (no. E540) in the Province of Azuay, Ecuador, are in very young bud, and in flower, respectively, but confirm the distribution of the species in southern Ecuador and add to the probability of its occurrence in Peru.

Blepharocalyx salicifolius (HBK.) Berg, Linnaea 27: 413. 1856. *Myrtus salicifolia* HBK. Nov. Gen. & Sp. 6: 136 (folio ed. p. 108). 1823.

A shrub 3 meters tall, entirely glabrous except the petals and calyx-lobes and the sparingly pale-strigose bracts and vegetative buds; leaves small, lanceolate, 0.6–1.2 cm. wide, 1.5–4 cm. long, 2.5–3.5 times as long as wide, the tip acute, attenuate or indistinctly acuminate, sometimes subfalcate and often mucronate, the base acute to somewhat rounded, the margins cuneately decurrent on the slender channeled petiole 0.5 mm. thick, 2–4 mm. long; midvein slightly impressed above, raised beneath; lateral veins indistinct because of slightly smaller intermediate veins and because of irregular branching, 6–10 (–12) pairs, slightly elevated on both surfaces; marginal vein about equaling the laterals and slightly arched between them, about 0.5 mm. from the margin; leaves nearly concolorous, the upper surface lustrous with glandular dots scarcely or not at all visible at maturity, the lower slightly paler and duller, gland-dotted; inflorescence a slender axillary 3- to 7-flowered dichasium 2 cm. long, the terminal flower sessile, the lateral branches divaricate, 3–5 mm. long; bracts deciduous before anthesis; flowers small, the buds up to 3 mm. long, the hypanthium narrowly obconic; calyx-lobes in 2

nearly equal pairs, suborbicular, imbricated, about 1.5 mm. long and wide, ciliate-fimbriate, appressed-silky within, prominently convex on the back and the centers evident as separate projections even in the young buds, articulate at the base and deciduous after anthesis; petals ciliate-fringed, a little longer than the calyx-lobes (Kunth); style probably 3–4 mm. long; stamens about 140 (Kunth), about 3 mm. long; ovary 2- to 3-locular, the ovules 9–12 in each locule, attached to the central axis; fruit unknown.—F.M. Neg. 36906.

Peru (probably). Ecuador.

13. CAMPOMANESIA Ruiz & Pavón

Reference: Berg, in Linnaea 27: 427–435. 1856; and in Mart. Fl. Bras. 14, pt. 1: 438–459. 1857.

Calyx-lobes 5, distinct, membranaceous, broadly rounded. Hypanthium scarcely produced above the ovary. Ovary 4- to 11-locular, the ovules biseriate in the inner angles of each locule. Seed reniform, with membranaceous,[1] glandular-verrucose testa. Embryo spirally involute. Flowers (in the Peruvian species) 4, in 2 decussate pairs appearing with the new leaves at the lowest nodes of short axillary branches, the fertile nodes usually leafless (or with linear bracts up to 3 mm. long), the axis sometimes abortive above the higher fertile node, or (usually) elongate and leafy. Leaves (in the Peruvian species) having the 3–4 lowest pairs of lateral veins closely grouped and the succeeding ones increasingly distant.

A genus according to Berg of more than 50 species, mostly natives of southern and eastern Brazil; a few species range south to Uruguay, and a few occur in the Guianas. Only the following species are surely known to occur in western South America. *Campomanesia crenata* Berg, in Mart. Fl. Bras. 14, pt. 1: 456. 1857, was stated by Berg to have come from Ega, Brazil, on the upper Amazon. The type, and only known specimen, in the Vienna herbarium, is from Poeppig's herbarium and bears Poeppig's notation: "Ubi legerim nescio; certe nec chilensis nec cubensis planta. Verosimiliter ad floram Egensem pertinet." The plant is nearly glabrous, with ovate, acuminate, crenate leaves 3–5 cm. long, and the flowers solitary, in several pairs at the lower, bracteate or leafy nodes of new branchlets, on slender peduncles to 3 cm. long. The buds are 6–8 mm. long.—F.M. Neg. 31439.

[1] This tissue is described by Berg as membranaceous, but it is actually (in the Peruvian species) a rather tough leathery integument, much thicker and less delicate than the membranaceous testa in the American eugenioid Myrtaceae.

Calyx-lobes broadly rounded, 3.5–5 mm. wide, 3–6 mm. long, often longer than wide and somewhat narrowed at base, in late anthesis widely spreading from the summit of the globose hypanthium and separated by narrow sinuses; style 5–8 mm. long; petals 9–11 mm. long ..... *C. lineatifolia*

Calyx-lobes rounded-triangular, 5–8 mm. wide at base, 4–5 mm. long, wider than long, in late anthesis spreading disk-like from the margins of the explanate hypanthium, with hardly any sinuses between them; style 8.5–12 mm. long; petals 2 cm. long. *C. speciosa*

Campomanesia lineatifolia R. & P. Syst. 128. 1798. *C. cornifolia* HBK. Nov. Gen. & Sp. 6: 150 (folio ed. p. 119). *pl. 547.* 1823. *Psidium rivulare* DC. Prodr. 3: 233. 1828.

A small tree, up to about 10 meters high, finely pubescent on the branchlets, inflorescence and young foliage with very slender crisp grayish-brown or brown hairs up to 0.5 mm. long, some hairs persisting on the lower surface of the leaves at maturity; hypanthium and calyx very densely felted with similar hairs; leaves broadly ovate or elliptic, varying to ovate, at flowering time often 4–6.5 cm. wide, 7–11 cm. long, at maturity up to 8 cm. wide and 9–16 cm. long, usually 1.5–2 times as long as wide, rather abruptly narrowed at tip to a short, broad, often triangular and pointed or cuspidate acumen; base broadly rounded, subtruncate or subcordate, the margins shortly decurrent on the relatively slender petiole about 1 mm. thick, 10–15 mm. long; blades subentire, the margins undulate and appearing crenate; midvein and main lateral veins impressed above, prominently elevated beneath; lateral veins 5–7 (usually 6) pairs, leaving the midvein at an angle less than 45°; at least the lowest laterals nearly straight at base, diminishing distally, each lateral incurving as it approaches the margin, and connected to the next succeeding vein by small transverse veins; leaves mostly browning in drying, the upper surface smooth and obscurely veiny, sometimes impressed-puncticulate, the lower paler, dull and minutely dark-glandular; pedicels slender, about 1 mm. thick, 1.5–3 cm. long; bracteoles linear-filiform, deciduous at anthesis, 2–4 mm. long; hypanthium obconic, becoming globose after anthesis, the calyx-lobes broadly rounded, 3.5–5 mm. wide, 3–6 mm. long, appressed to the bud but widely flaring after anthesis; disk 5–8 mm. wide, hairy; style subulate, notably thickened and hairy at base, glabrous above, 5–8 mm. long, the stigma peltate, flat, 0.7 mm. wide; petals white, rotund or obo-

vate, 9–11 mm. long, gland-dotted, ciliate, pubescent outside; stamens very numerous, 200–300, up to 10 mm. long, the anthers 1.5 mm. long; fruit edible, oblate, yellow, 3 cm. long and 4–5 cm. wide; seed reniform or oval in outline, rather flat, about 10–12 mm. long by 8–9 mm. wide, verrucose, the entire surface obscured by the closely approximate yellowish glands up to 0.5 mm. wide.—F.M. Negs. 19735, 29481.

San Martín: Pongo de Cainarachi, *Klug 2618*. Tarapoto, *Williams 6053*.—Loreto: Río Ucayali, *Tessmann 3088*. La Victoria, *Williams 2777*. Yurimaguas, *Poeppig; Williams 4030, 4289, 5001*. Santa Rosa, *Williams 4829*.—Locality uncertain: Pampayacu, half cultivated, *Kanehira 346*. *Dombey 789* (herb. Paris). *Ruiz & Pavón*, type (no. 24/93 ex herb. Madrid). "Palillo." In Ecuador reported as "Guayava de Palo" (Little) and in Colombia as "Guayavo de Anselmo" (Bonpland, Triana). Bolivia and Amazonian Brazil to Colombia.

Campomanesia speciosa (Diels) McVaugh, comb. nov. *Psidium speciosum* Diels, Verh. Bot. Ver. Brandenb. 48: 186. 1907.

Small tree to 8 meters high with grayish white bark (Sandeman), the young branchlets and peduncles roughened with many convex glands; plants nearly glabrous, the vegetative buds pale-hairy and a few hairs persistent on the lower surface of the midvein; hypanthium and calyx densely and finely short-velutinous with yellowish-gray or pale hairs 0.2–0.3 mm. long; leaves elliptic to ovate or obovate, (1.5–) 3–6 cm. wide, (3–) 6–14 cm. long, acuminate, (1.5–) 2 times as long as wide, obtuse or rounded and often unequal-sided at base, the margins decurrent on the deeply sulcate and ridge-margined petiole 0.5–1 mm. thick, 5–10 mm. long; midvein impressed above, prominent beneath; lateral veins 5–8 pairs with no intermediates, impressed above, strongly arcuate-ascending, diminishing distally and not forming a marginal vein except sometimes in the apical third of the blade; basal pairs of veins 3–7 mm. apart, those in the distal half of the blade often 1.5–2 cm. apart; veinlets on both surfaces somewhat raised in drying and forming a very fine but evident network, the areoles unequal-sided and irregular, up to 0.5 mm. across; blades "slightly glossy" (Sandeman), paler beneath, scarcely glandular above, evenly and conspicuously so beneath; peduncles strictly axillary, glabrous, 1-flowered, 1 mm. thick and 10–15 mm. long (or on the same plant some short axillary leafy branches terminated by a sessile flower which is subtended by a pair of pedicellate lateral

flowers); bracteoles of solitary flowers linear, nearly glabrous, 1 mm. wide, 7 mm. long, deciduous at anthesis; bud about 1 cm. long, obovoid, not closed, the calyx irregularly 5- (rarely 4-) lobate; hypanthium in anthesis explanate, forming a flat irregularly pentagonal disk which is 1.3–1.5 cm. wide across the extremities formed by the tips of the deltoid and nearly straight-sided calyx-lobes; calyx-lobes finely and densely appressed-pubescent on both sides, in bud rounded-triangular, 4–5 mm. long, 5–6 mm. wide (or one of them larger, longer, irregularly erose at tip and partially covering the bud); calyx in opening splitting slightly at the base of each sinus, the lobes in age deltoid, 4.5–5 mm. long, 6–8 mm. wide, spreading; disk 5-angled, 6–8 mm. wide, short-hairy, the inner circular portion at the summit of the ovary appressed-hairy, 4.5–5 mm. wide; style 8.5–12 mm. long, the flat peltate stigma 1–1.5 mm. wide; stamens about 500, about 12 mm. long, the anthers 1 mm. long, "bright yellow" (Sandeman); petals "pale apple pink" (Sandeman), obovate, about 1.5 cm. wide, 2 cm. long, thickly beset with coarse convex glands 0.25–0.3 mm. in diameter; ovary 8-locular, the ovules biseriate on the inner angles, about 12 in each locule; fruit unknown.—F.M. Neg. 23498; Univ. of Mich. Negs. 1095, 1101.

?Huánuco: Ganzo Azul, Río Pachitea, 1500 feet elevation, October, 1942, *Sandeman 3408* (herb. Kew). Type from Amazonian Brazil.

The above description is based wholly upon Sandeman's collection. The foliage, as nearly as can be seen by comparison with the photograph of the type collection (*Ule 5483*, in herb. Delessert), is precisely like that of the type. The inflorescence of the type is said to consist of "cymae dichasiales pluriflorae axillares"; the photograph shows these to be leafless, in contrast to the (perhaps abnormal) condition in Sandeman's collection. The petals in the type are described by Diels as tomentellous without, and the style is said to be 4 mm. long. In other respects Ule's collection and that of Sandeman seem to agree well, and I regard them as conspecific.

14. **MYRRHINIUM** Schott

Reference: Berg, in Linnaea 27: 437–439. 1856; and in Mart. Fl. Bras. 14, pt. 1: 465–468. 1857.

Calyx-lobes 4, distinct. Ovary bilocular, the ovules numerous, biseriate on the central axis. Petals red, each with a short broad claw which sometimes bears near its base 1–3 erect filiform appendages

0.6–1 mm. long. Stamens red, 4–8, twice folded in the bud. Seed pale, lustrous, reniform to cochleate, with bony testa. Embryo arcuate. Flowers in thrice dichotomous cymes with a sessile flower in each fork.

A small and distinctive South American genus in which 7 species have been described. The distinguishing characters used by Berg and more lately by Burret, however, appear to be neither constant nor significant; the pubescence of branchlets and cymes varies quite independently of stamen-number, and neither of these appears to be correlated with leaf-shape. Schott's original material, from southeastern Brazil, had relatively broad and obtuse leaves unlike anything I have seen from other localities, but otherwise does not seem to differ significantly from Peruvian material. The usual number of stamens seems to be 6, but this number varies even from flower to flower on the same plant, and the presence of the tiny petal-appendages, sometimes supposed to represent staminodia, is not correlated with stamen-number. In view of these facts I have thought it best to accept the dictum of Bentham, as expressed in *Plantae Hartwegianae* and in the *Genera Plantarum*, that the genus comprises but a single species.

Myrrhinium atropurpureum Schott, in Spreng. Syst. Veg. 4, pt. 2: 405. 1827. *Felicianea rubriflora* Camb. in St. Hil. Fl. Bras. Merid. 2: 376 (folio ed. p. 271). *pl. 157*. 1829. *Tetrastemon loranthoides* Hook. & Arn. Bot. Misc. 3: 318. 1833. *Myrrhinium atropurpureum* var. *octandrum* Benth. Pl. Hartw. 131. 1844 (type from near Loja, Ecuador, *Hartweg no. 738*). *M. peruvianum* Berg, Linnaea 27: 438. 1856 (type from near Loja, Ecuador, *Hartweg 738*). *M. lanceolatum* Burret, Notizbl. Bot. Gart. Berlin 15: 508. 1941.

A shrub up to 5 meters high, cauliflorous, the flowers in small leafless cymes on old wood; branchlets and often petioles and cymes pubescent, the leaves sometimes sparingly strigose on the midvein beneath or on the upper surface as well; leaves nearly sessile, coriaceous, and with somewhat revolute margins, elliptic, mostly rather narrowly so, 1–2 cm. wide, 3–9 cm. long, (2–) 3–5 times as long as wide, sometimes obtuse at both ends, but more often acute at apex, sometimes mucronate, the base attenuate to the petiole 1–2 (rarely –4) mm. long; midvein sulcate or impressed above, prominent beneath, the lateral veins slender, ascending, nearly straight, inconspicuous above and scarcely evident beneath; marginal vein about equaling the laterals, usually not apparent; leaves concolorous and

yellow-green in drying, somewhat lustrous, both surfaces with inconspicuous glandular dots; cymes 2–3 cm. long, in clusters directly from the naked twigs or in 2–5 pairs on an axis 0.2–1 cm. long; bracts persistent, becoming scarious, ovate, acute, decurrent in cup-like pairs, convex on the back, 1 mm. long or less, or occasionally larger and foliaceous; flowers tetramerous; hypanthium cylindric or campanulate, 1.5–2 mm. long; calyx-lobes like the bracts, 1–1.5 mm. long, persistent in fruit; stamens usually 6 (6–8) in Peruvian specimens, straight and much exserted in anthesis, the filaments filiform, 12–18 mm. long, the anthers oblong or broader near the base, attached dorsally near the base, 1.4–2 mm. long; style red, filiform, 22–27 mm. long, the stigma capitate, obscurely 2-lobed; petals dull red, purplish-red or reddish-brown, obovate, thickly and prominently gland-dotted without, 3.5–5 mm. long; fruit a few-seeded berry, whitish and edible (according to St. Hilaire); slightly immature fruit broadly ellipsoid to obovoid, 4–5 mm. in diameter, 5–6 mm. long.

Junín: Valley of the Río Mantaro near Huachicna, 2,300–2,400 meters, *Weberbauer 6544*.—Cuzco: Río Apurímac, 1,900–2,000 meters, *Weberbauer 5880* (type of *M. lanceolatum*). Central Ecuador to northern Argentina and southern Brazil.

EXCLUDED SPECIES

Myrtus acuminata [Sessé & Mociño]. A specimen from the Moricand herbarium, now at Geneva (G), is labeled "Myrtus acuminata Peru," and in another hand "Pavon." These data were doubtless added erroneously, as in the case of other species in Moricand's collection, to a Sessé & Mociño collection from Mexico or the West Indies. *Myrtus acuminata* Sessé & Mociño was described from Tumacao, Puerto Rico, and is represented in the duplicate collection at Chicago by two specimens, nos. 2036 and 2094. The "Pavon" specimen referred to above agrees in every respect with the Sessé & Mociño collections and most probably was given by these collectors to Pavón and subsequently by Pavón to Moricand. The plant in question is a species of *Calyptranthes*, allied to *C. pallens* or *C. zuzygium*.

Myrtus emarginata [Sessé & Mociño]. A specimen from the Moricand herbarium (G) is labeled, apparently by Moricand, "Myrtus emarginata Pavon in litt. non Kunth," and the locality is given as Peru. A second specimen, also stated to be from Peru, is labeled "Myrtus fulgens Pavon in litt." Both specimens, according to the labels, were received by Moricand from Pavón in 1827. The plant of "Myrtus fulgens" agrees precisely with the Sessé & Mociño speci-

men under the same name (no. 2135, duplicate at F); it is likewise surely conspecific with the plant of "Myrtus emarginata" in Moricand's herbarium, but it has ovate or elliptic and bluntly acuminate leaves, whereas in the specimen of "emarginata" the leaves are relatively broader and mostly (perhaps because of injuries to the tips) emarginate. The plant is evidently a species of *Amomis;* the embryo is uncinate, the leaves are markedly reticulate, and the calyx-lobes are 5 in number. The *Myrtus emarginata* of Sessé & Mociño came originally from the mountains near Fajardo, Puerto Rico; it is not represented among the duplicates at Chicago. Their "Myrtus fulgens" was apparently never published. It seems clear that Pavón, in sending some Sessé & Mociño duplicates to Moricand, reported them by name only, without stating either the name of the collector or the locality of collection, and that Moricand mistakenly assumed that all the specimens were collected in Peru by Pavón himself.

Myrtus parviflora [Sessé & Mociño]. A specimen from the Moricand herbarium (G), is labeled "Myrtus parviflora Peru," and in another hand "Pavon." These data were evidently added, as in the case of *Myrtus emarginata,* to a Sessé & Mociño collection from Mexico or the West Indies. *Myrtus parviflora* Sessé & Mociño is from the seashore of "Palo seco et Cangrejos, Insulae de Puerto Rico"; the plant is described as having 4 petals and "Pedunculi axillares, terni, raro plures, vel pauciores, filiformes, erecti, petiolis longiores." Among the Sessé & Mociño duplicates now at Chicago, there are two numbers which bear the name *Myrtus parviflora.* One of these (no. 2028) is a *Myrcia,* identified by Standley as *Myrcia citrifolia* (Aubl.) Urb. The second, which fits the above description admirably, and doubtless is to be considered the type of the species, is, according to Standley, *Eugenia capuli* (Schlecht. & Cham.) Berg. The plant in the Moricand herbarium, however, is a third species, a glabrous *Eugenia* with small green lanceolate leaves and short racemose inflorescence, which bears some superficial resemblance to the two species named above. It has not been identified, but matches precisely no. 2089 of the Sessé & Mociño collection, which was identified by the collectors simply as "Myrtus." Nothing like it has been found subsequently in Peru, and presumably it is not a member of that flora.

A number of Chilean species collected by Dombey in the eighteenth century were mistakenly supposed by A. L. de Jussieu to have originated in Peru. De Jussieu distributed some of the specimens, labeled as from Peru, to DeCandolle and others, and he himself

named and described a few species supposedly from the same region. Additional species were described by DeCandolle in the third volume of the *Prodromus* on the basis of "Peruvian" specimens furnished by De Jussieu. The error was perpetuated by Berg in his revision of the American Myrtaceae in volume 27 of *Linnaea*, and it is only recently that Kausel has pointed out the probability that the "Peruvian" specimens in question belong to Chilean species (Rev. Argent. Agron. 9: 221–222. 1942). Of the seven species listed by DeCandolle as having been collected by Dombey in Peru, only *Eugenia? Acka* seems to have been Peruvian in origin. The others are Chilean and are listed below with their modern nomenclatural equivalents:

Eugenia dombeyana DC. Prodr. 3: 276. 1828 [*Myrceugenia lanceolata* (Juss. ex Duham.) Kausel].

Eugenia exsucca DC. l.c. 278 [*Myrceugenia exsucca* (DC.) Berg].

Eugenia? leptospermoides DC. l.c. 266 [*Myrceugenia leptospermoides* (DC.) Kausel].

Eugenia parvifolia DC. l.c. [*Myrceugenia parvifolia* (DC.) *Kausel*].

Eugenia obtusa DC. l.c. [*Myrceugenia obtusa* (DC.) Berg].

Myrtus multiflora Juss. ex Duham. Traité des Arbres ed. 2, 1: 208. 1800; DC. l.c. 240 [*Amomyrtus luma* (Mol.) Legr. & Kausel].

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